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Congruence of Diagnostic Impressions: Comparing Clinician Diagnosis and Personality Assessment Inventory Diagnostic Categories in an In-Patient Forensic Population

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CONGRUENCE OF DIAGNOSTIC IMPRESSIONS: COMPARING CLINICIAN DIAGNOSIS AND PERSONALITY ASSESSMENT INVENTORY DIAGNOSTIC CATEGORIES IN AN INPATIENT FORENSIC POPULATION

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ABSTRACT

The Personality Assessment Inventory (PAI) is a fairly new self-report, objective assessment measure of adult personality. This study compared diagnostic congruence between PAI-informed diagnosis and clinician-established diagnosis. Data from PAI profiles for 69 patients in a mixed-gender forensic population who completed a valid PAI between August 2000 to June 2003 were compared with past, current and discharge patient diagnoses. The hypothesis that PAI-informed diagnoses would be congruent with most clinician-established diagnoses was not supported, with only 37% of diagnoses congruent. The hypothesis that the most congruent diagnoses would be diagnoses made closest in time to PAI administration was supported, with the majority of total diagnostic congruence within 90 days of test administration. Implications of the study are discussed.

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INTRODUCTION

The Personality Assessment Inventory (PAI), a self-report assessment of personality (Morey, 1991), is becoming popular in forensic assessment settings. This popularity is due to the facts that because many of the personality scales (e.g., Aggression, Antisocial Features) are relevant to forensic domains and that the PAI requires only a fourth-grade reading level (Douglas, Hart, & Kropp, 2001; Edens, Hart, Johnson, Johnson, & Olver, 2000; Morey, 1991).

No researchers to date have compared congruency of PAI-informed diagnoses with clinician-established diagnoses in any population. In addition, given that there is a question of efficiency of the PAI in identifying psychopathy based on the Antisocial Features (ANT) scale as indicated by Edens et al. (2000), particularly their statement that there was "no evidence of an ANT cutoff that maximized overall diagnostic efficiency" (p. 137), questions of diagnostic utility with the PAI clearly exist.

Research is clearly needed to compare PAI and clinician-established diagnoses for clinical practice information as well as to further the research base on the PAI. Diagnostic and conceptual congruence of clinician diagnoses with those identified by the PAI (i.e., psychosis, personality disorder, substance abuse problems, depression, and anxiety) are of importance to assessment and treatment, to ensure that all treatment issues identified by the PAI are considered by the clinician, and to assist with diagnostic accuracy. To address this issue, I looked at a sample with which the PAI has been used extensively – forensic patients at Oregon State Hospital (OSH), where profiles from all

PAI administrations have been kept for research purposes. The specific research question for this study was as follows: In the forensic population at OSH from August 2000 to July 2003, how congruent were PAI-informed diagnoses and clinician-established diagnoses? My research hypotheses were that PAI-informed diagnoses were congruent with most clinician-driven diagnoses and that the most congruent diagnoses would be the diagnoses made closest in time to the administration of the PAI.

LITERATURE REVIEW

Personality Assessment Inventory

Description

As described by its developer (Morey, 1991), the PAI is a self-administered, objective inventory of adult personality and functioning. It provides information on critical clinical variables on 22 non-overlapping full scales (4 validity scales, 11 clinical scales, 5 treatment-consideration scales, and 2 interpersonal scales). To assist interpretation and cover the full range of personality constructs, 10 full scales (9 clinical scales and 1 treatment scale) contain conceptually derived subscales. For example, the Schizophrenia scale has 3 subscales (Psychotic Experiences [SCZ-P], Social Detachment [SCZ-S], and Thought Disorder [SCZ-T]) that provide further diagnostic information. Appendix A lists and describes all PAI scales and subscales; both the name and acronym will be used for infrequently mentioned scales throughout this review of the literature.

The PAI was developed and standardized on a sample of adults aged 18 and above (Morey, 1991). Individuals with fourth-grade reading ability can usually complete the PAI in less than one hour. The inventory consists of 344 items rated on a 4-point scale with anchors of *false, slightly true, mostly true,* and *very true.* The PAI can be administered by technicians trained in the administration of self-report tools (Morey, 1991).

Morey (1991, 1996) noted that the PAI has 27 critical items, indicators of potential crisis situations, that have a very low endorsement in the normal sample and

that facilitate follow-up questions. Interpretative software is available that provides a comprehensive, individualized report; however, interpretation should only be completed by professionals trained in psychological test interpretation (Morey, 1991, 1996). PAI scale and subscale scores are translated to *T*-scores, allowing for easy determination of pronounced deviations from typical responses. Based on the response profile, computer interpretive software then generates diagnoses based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV*; American Psychiatric Association [APA], 1994), that will be compared to the clinician-generated diagnoses in this study.

Rogers (2003) pointed out four advantages of the PAI over the Minnesota Multiphasic Personality Inventory, Second Edition (MMPI-2; Butcher et al., 1989): (a) four gradients of response rather than two; (b) increased comprehensibility (lower-grade reading level); (c) more directly interpretability due to excellent internal consistency and non overlapping scales (each item is used only on one scale); and (d) more direct relevance of the *DSM-IV* with PAI clinical scales in terms of conceptualization of mental disorders. In addition, he also pointed out the 344-item PAI is shorter than the MMPI-2, increasing convenience in clinical settings. Rogers cautioned that the PAI should not be considered to be a diagnostic measure, but it may augment *DSM-IV* diagnoses from structured and clinical interviews.

Psychometric Characteristics

Reliability and validity data for the PAI were based on a census-matched, normative sample of 1,000 community-dwelling adults (matched on the basis of gender, race, and age), a sample of 1,265 patients from 69 clinical sites, and a college sample of 1,051 students (Morey, 1991). Median split-half/Cronbach Alphas for full scales were

.81, .86, and .82 for the normative, clinical, and college samples, respectively, indicating acceptable reliability.

Because the PAI was normed on adults in multiple community and clinical settings, profiles can be compared with both populations. Reliability studies have indicated that the PAI has a high degree of internal consistency across samples (Morey, 1991). The results have been shown to be stable over periods of 2 to 4 weeks; across that interval the median test-retest reliability for all three samples was .83, and the mean absolute *T*-score change tended to be 2 to 3 *T*-score points for most full scales (Morey, 1991).

Boone (1998) conducted a study of internal consistency reliability of scores for 111 adult psychiatric inpatients (78 male, 33 female), all referred for assessment to a state-run psychiatric hospital. He compared this population to the PAI clinical standardization group described above and found that the internal consistency reliability coefficients were "in general, large and acceptable...consistently higher than those reported for the clinical scales of the MMPI-2, especially MMPI-2 scales containing subtle items" (p. 842). The reliability of the PAI subscales was lower than the reliability of the MMPI-2 subscales overall, but this result was expected because there are fewer items on the PAI than on the MMPI-2 (the alpha coefficient for the PAI full clinical scales averaged .82, and the alpha coefficient for the PAI subscales averaged .66).

Morey (1991) examined convergent and discriminant validity of the PAI validity and clinical scales with more than 50 other measures of psychopathology. The PAI and other scales were administered concurrently to various samples. For example, for validity scale correlations, the PAI Negative Impression Management (NIM) scale was correlated

(r = .54) with the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1967) F Scale, which measures extreme or exaggerated problem endorsement. The PAI Positive Impression Management (PIM) scale was correlated with the MMPI K (r =.47) and L (r = .41) scales, which measure test defensiveness and cooperativeness and willingness to endorse problems and faults, respectively. Examples of clinical scale validations with other instruments included a relatively high correlation (r = .73) between the PAI Anxiety (ANX) scale and the State-Trait Anxiety Inventory (STAI; Spielberger, 1983) and a high correlation (r = .81) between the PAI Depression (DEP) scale and the Beck Depression Inventory (BDI; Beck & Steer, 1987).

Duellman et al. (2004) conducted a comprehensive analysis of 17 published articles on the use of the PAI in forensic and corrections settings. They examined correlations and effect sizes in those studies to assess concurrent validity with other psychological measures, including the Psychopathy Checklist-Revised (PCL-R; Hare, 1991), the Personality Disorder Evaluation (PDE; Loranger, 1988), the Schedule of Affective Disorders and Schizophrenia (SADS; Spitzer & Endicott, 1978), the Structured Interview of Reported Symptoms (SIRS; Rogers, Bagby, & Dickens, 1992), the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996), the Overt Aggression Scale (OAS; Yudofsky, Silver, Jackson, Endicott, & Williams, 1986), the Barratt Impulsiveness Scale-11 (BIS-11; Barratt, 1994), the Buss-Perry Aggression Scale (BPAQ; Buss & Perry, 1992) and the Suicide Probability Scale (SPS; Cull & Gill, 1992). The authors also examined overall correlations and effect sizes with those instruments and the PAI in five categories: mental and personality disorders; psychopathy; violence potential; suicide potential; and feigning, malingering, or defensiveness. They found that

the PAI evidenced moderate and significant overall correlations in forensic and correctional settings (r = .26, ES = .54). For the category of mental and personality disorders, the PAI correlated moderately with the PDE (r = .40, ES = .87), the SADS (r =.33, ES = .70), and the SIRS (r = .17, ES = .35). Regarding psychopathy, the PAI correlated with the PPI (r = .53, ES = 1.25) the PCL-R (r = .28, ES = .58), the BIS-11 (r = .27, ES = .56), the BPAQ (r =.32, ES = .67), and the PDE (r = .47, ES = 1.07). The PAI correlated in the violence potential category with the BPAQ (r = .48, ES = 1.09), the BIS-11 (r = .31, ES = .65), and the OAS (r = .21, ES = .43). In the suicide potential category, the PAI correlated with the SPS (r = .68, ES = 1.86) and the SADS (r = .63, ES = 1.62). Finally, the PAI correlated weakly with the SIRS (r = .06, ES = .12) in the feigning, malingering, and defensiveness category – however, when the PAI PIM scale data points were removed (a logical step, as the authors pointed out, because someone attempting to fake bad would not score highly on positive impression management) the recalculated correlation was stronger (r = .18, ES = .37).

Four validity scales have been incorporated into the PAI, assessing deviation from honest responding (Inconsistency [INC] and Infrequency [INF]) and positive and negative impression management, as noted above (PIM and NIM). Morey (1991) compared 1,000 computer-generated random response protocols against profiles from three subsamples and found marked separation of scores of actual respondents and random scores; that is, 99.4% of the random profiles were identified by either one or both of the INC and/or INF scales.

To summarize, the PAI has been initially shown to be an instrument that has some advantages over the MMPI-2, with good internal consistency, clinical scales directly

relevant to *DSM-IV* mental disorder conceptualizations, convergent and discriminant validity, as well as moderate and significant validity with other measures of psychopathology.

Research on the Personality Assessment Inventory

In the last 10 years, the PAI has been the subject of a small number of studies, conducted primarily in community or correctional/forensic settings, in which researchers looked at the relationship between the PAI and specific behaviors. In this section, I first consider studies completed in community settings, followed by those in correctional/ forensic samples.

Use of the PAI in Community Settings

A small number of community studies have been conducted with the PAI. Behaviors that have been studied in community settings include malingering (Bagby, Nicholson, Bacchiochi, Ryder, & Bury, 2002; Blanchard, McGrath, Pogge, & Khadavi, 2003; Rogers, Ornduff, & Sewell, 1993; Rogers, Sewell, Morey, & Ulstad, 1996), random responding (Clark, Gironda, & Young, 2003; LePage & Mogge, 1997; Morey & Hopwood, 2004), socially desirable responding (Baer & Wetter, 1997; Peebles & Moore, 1998), and coping styles (Deisinger, Cassisi, & Whitaker, 2003). I will discuss each topic in turn.

Malingering. Rogers et al. (1993) conducted a study to determine the ability of participants to generate fake profiles on the PAI for schizophrenia, depression, and generalized anxiety disorder. The participants were 76 undergraduate psychology students, randomly assigned to one of the three mental conditions to act as unsophisticated simulators and feign that disorder. Another 25 undergraduate psychology

students from the same courses acted as controls, or unsophisticated/naïve simulators, and were given standard instructions. In addition, 33 graduate clinical/counseling psychology students were also randomly assigned feign the above three conditions, with 15 additional graduate students as controls, or sophisticated simulators. Unsophisticated/naïve simulators were given simple instructions to feign a mental disorder and given a brief written overview of the mental disorder in their experimental condition. They had several minutes to prepare, and they were told to avoid detection as a malingerer and to simulate their disorder in a convincing manner. Sophisticated simulators were given one week to prepare and were allowed to use any resource except the PAI test manual, with similar goals of avoiding detection as a malingerer and to simulate their disorder in a convincing manner.

Although approximately 90% of the students across all types of simulators were able to achieve elevations on targeted scales of the PAI (Schizophrenia [SCZ], Depression [DEP], and Anxiety [ANX]), the authors found that using a cutoff score of 8 or more on the PAI Negative Impression (NIM) subscale was highly effective for detecting feigned schizophrenia, marginally effective for detecting feigned depression, and ineffective with detecting feigned generalized anxiety disorder. They also found that the assumed additional sophistication of the graduate clinical/counseling psychology students did not have relevance to successful malingering, but graduate students were able to produce higher clinical elevations on the DEP scale in simulating depression than were unsophisticated undergraduate psychology students.

Rogers et al. (1996) replicated the malingering study just described with 166 undergraduate psychology students acting as naïve simulators (45 simulating

schizophrenia, 39 simulating depression, 38 simulating generalized anxiety disorder, and 44 controls) and 80 doctoral psychology students as sophisticated simulators (20 simulating schizophrenia, 21 simulating depression, 19 simulating generalized anxiety disorder, and 20 controls). The researchers added a comparison of these groups with clinical samples composed of patients diagnosed with those specific disorders as well as a cross-validation of PAI decision rules on additional samples of simulators and patients. The authors found that unsophisticated feigners tended to globally respond with elevations on the majority of clinical scales, whereas sophisticated feigners were very focused with elevations on only the designated scales associated with the disorders. The authors' conclusions were that simple cutoff scores to detect feigning based on unusual or atypical symptoms were less likely to be effective with mood and anxiety disorders than with other clinical scales, because such atypical symptoms are more likely to fall into a psychotic spectrum than other disorders. The authors found moderate effectiveness for the PAI Validity scales in naïve simulators, and only modest predictive power for these scales with sophisticated simulators; however, applying a two-stage discriminant analysis (using a Rogers Discriminant Function, or RDF) led to an approximately 80% success in detection of all three feigned mental disorders.

Bagby et al. (2002) compared feigning on the MMPI-2 and the PAI by administering both instruments twice to 45 undergraduate psychology students from the University of Toronto. The first time the participants were instructed to respond honestly and the second time they were instructed to feign any mental disorder, and they were randomly split into either a coached or an uncoached condition. All simulators were given an example of a situation in which a person might feign a mental disorder (e.g., a

long-term disability claimant), but the individuals in the coached group were also given information about the validity scales and strategies for avoiding detection on the scales. The results were compared to profiles from a sample of 75 psychiatric patients who had completed both tests as part of a clinical assessment. The authors found that a subset of MMPI-2 scales, especially the Psychopathology Infrequency Scale [F(p)], distinguished psychiatric patients from malingerers. The PAI Malingering (MAL) and NIM scales were not useful in detecting malingering profiles; however, the PAI Rogers Discriminant Function (RDF) scale was marginally better than the MMPI-2 scales for detecting both coached and uncoached malingering psychological symptoms.

Blanchard et al. (2003) replicated and expanded the above study design. A total of 52 student participants completed both the MMPI-2 and the PAI with instructions to overreport psychological symptoms. Further, some ($n = 24$) were told to imagine they were in either a forensic ($n = 24$) setting and were trying to convince a jury to find them not guilty due to insanity; the others ($n = 28$) were told to imagine that they were in a psychiatric setting and wanted to convince a doctor they should be admitted to a psychiatric hospital. The authors compared the simulators to a larger sample of 432 psychiatric inpatients who had completed both instruments as part of a clinical assessment. They also considered all of the MMPI-2 scales, as opposed to a subset, that had previously been recommended for the identification of overreporting of symptoms. The MMPI-2 scales were better indicators of overreporting of psychological symptoms than was the PAI, but the authors also reported that the PAI scales "added incremental validity to the prediction of faking in every analysis conducted" (p. 203). Blanchard and colleagues stated that "either inventory by itself offers a valid approach to overreporting"

(p. 203) and suggested an administration of both the MMPI-2 and the PAI if feigning of psychological symptoms was a clinical issue. In addition, they found both the MMPI-2 and the PAI were sensitive to Back Random Responding (BRR; i.e., the person taking the test responds in a valid way in the beginning of the test but responds randomly later in the test).

Random responding. Clark et al. (2003) conducted two studies to examine detection and effects of BRR using the MMPI-2 and the PAI. In the first study, the authors compared the MMPI-2 normative set (2,600 adults drawn from seven geographical locations in the United States) with a clinical set of 1,400 male and female veterans who completed the MMPI-2 at a southeastern Veterans Administration [VA] center between 1991 and 1996). Clark and colleagues simulated BRR by randomly generating substitution items to replace the original response data from the back of the test forward to Item 18. The items were replaced in blocks of 50 (i.e., 0, 50, 100, etc.) up to 550 item replacements, and then the test profiles were rescored and compared to the original data. They found the MMPI-2 clinical and content scales to be relatively resistant to and sensitive to BRR, with the most effective and sensitive index being the MMPI-2 F – F(b) $\geq$ 20.

In the second study, Clark et al. (2003) used a second sample of 785 male and female veterans at a southeastern VA center that had completed the PAI between 1996 and 2001. The authors again simulated BRR by randomly generating substitution items to replace the original response data from the back of the test forward, in blocks of 50 up to 334 item replacements; the test profiles were rescored and compared to the original data. The authors found the PAI Inconsistency (ICN) and INF scales to be less effective than

the MMPI-2 at discriminating and detecting BRR, particularly at low levels, although the authors cautioned that a direct comparison between the two instruments was not possible due to differences in test construction.

In a response to Clark et al.'s (2003) study, Morey and Hopwood (2004) used the community and clinical standardization sample for the PAI (Morey, 1991) to parallel Clark et al.'s (2003) design. The PAI community sample included 904 adults from rural and urban environments from 13 geographically diverse states, and the PAI clinical standardization sample included 1,079 patients from 69 different clinical sites. Morey and Hopwood randomly manipulated these two samples by generating successive blocks of 50-, 100-, 150-, and 200-item random responses and inserting them in place of actual responses as a means of simulating BRR, for both PAI short and full test forms. To detect BRR, Morey and Hopwood computed *T* scores for the PAI Suicide (SUI) and Alcohol Problems (ALC) scales for both full and short PAI test forms and found the difference between responses for both scales on both the full and short forms with T scores greater than 5 were able to detect BRR. The SUI and ALC scales were more sensitive than the PAI ICN and INF scales and were comparable to the MMPI-2 $F - F(b) \geq 20$, which is the most effective BRR index according to Clark et al. (2003).

LePage and Mogge (2001) compared the validity rates of the MMPI-2 and the PAI in a rural inpatient population. Using 90 patients who completed the MMPI-2 and 90 patients who completed the PAI as part of the evaluation process, the patients were matched for gender, age, days since admission, and diagnostic category. The validity scales were analyzed with standard validity cut-off scores (i.e., MMPI-2 True and Variable Response Consistency [TRIN and VRIN] and the PAI ICN and INF. Random

responding as well as positive and negative impression management were also evaluated. The PAI had a significantly higher number of valid profiles (n = 59), compared with the MMPI-2 (n = 37), primarily due to higher patient endorsement of relatively rare statements, and the authors substituted the Psychopathology Infrequency F(p) scale for the Infrequency (F) scale, which reduced the number of MMPI-2 invalid profiles. The PAI profiles did not demonstrate lower levels of invalid profiles due to random responding, and positive and negative impression management were approximately equal on both tests. Overall, based on the few studies available, the PAI was found to be detectable and sensitive to BRR.

Socially desirable responding and coping styles. Underreporting symptoms is always a concern with personality testing. Baer and Wetter's (1997) study of underreporting psychological symptoms, or "faking good" (p. 402), on the PAI was conducted with 78 undergraduate psychology students split into two groups. Participants in the first group were encouraged to simply attempt to create an impression of excellent mental health, and participants in the other group were given the same instruction with the addition of brief information about PAI validity scales. Baer and Wetter found that two underreporting scales on the PAI (PIM and the Defensiveness Index [DEF]) were effective in discriminating standard profiles from uncoached participants attempting to underreport mental health symptoms without creating the appearance of faking, but they were less effective for discriminating standard profiles produced by coached participants. These results suggest that coaching may have enabled some participants to underreport mental health symptoms without detection.

Peebles and Moore (1998) conducted a study on socially desirable responding using the PAI PIM scale and Defensiveness Index (DEF) as well as the Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1984). The BIDR is a 40-item questionnaire based on a two-factor model of social responding (self-deception and impression management). The PAI was administered to 111 undergraduate students in an Introductory Psychology class in a Canadian university. All students were given two sets of the questions relevant to the PAI PIM and DEF scales (107 PAI questions, 40 BIDR questions) in a random order of presentation with instructions to answer in a honest/true manner with one set and as if trying to make a good impression with the second set. The authors found both the PIM and DEF scales were more effective for detecting socially desirable responding than the BIDR, and they suggested a PIM cut-off scale of 18 to correctly classify PIM responding rather than Morey's (1991) cut-off score of 23 (i.e., scores over 18 would indicate an attempt at a very favorable impression or reluctance to admit minor flaws). Peebles and Moore also suggested a DEF cut-off score of 5 for correctly classifying DEF responses that resulted in a correct classification of 83.3% of cases in this study, comparable to the rate achieved by a PIM cut-off of 18.

Deisinger et al. (2003) conducted a study of the COPE Inventory (Carver, Scheier, & Weintraub, 1989) to determine coping styles and the PAI to determine psychological functioning. Participants were a heterogeneous community sample of 168 adults residing in the greater metropolitan Chicago area; 63% were students and the rest were from various community groups. The sample was predominantly White (78.6%) and female (59.5%). The researchers assigned the participants based on their PAI scores to one of three PAI clusters defined by Morey (1996): (a) Cluster 1: normal; (b) Cluster

5: anxiety due to extreme stress; and (3) Cluster 6: eccentric, cold, aloof, impulsive, and aggressive, with unusual beliefs. They compared the clusters to differences in coping styles and found that normal individuals (Cluster 1) used significantly less avoidance than did participants in anxious or eccentric clusters (Clusters 5 and 6) and that normal individuals sought social support and venting more than eccentric individuals (Cluster 6) did but less than anxious individuals (Cluster 5) did. The authors also found gender differences, with women more likely to cope by seeking social support and men more likely to cope through hedonistic escapism.

Overall, results of studies in the community indicate limited research to determine whether PAI results can be feigned, or randomly answered (back random responding), and if detection of that malingering or random responding is possible, with promising findings. Rogers Discriminant Function (RDF) studies (Rogers, 1996), the use of PIM and DEF to detect underreporting of symptoms (Peebles & Moore, 1998), and studies on random responding (Clark et al., 2003; Lepage & Mogge, 2001; Morey & Hopwood, 2004) have added to the literature on better and more accurate PAI interpretation.

Use of the PAI in Correctional or Forensic Settings

Behaviors that have been studied in a corrections or forensic setting include violence (Wang & Diamond, 1999), psychopathy and malingering (Poythress, Edens, & Watkins, 2001), institutional misbehavior (Edens, Poythress, & Watkins, 2001; Walters & Duncan, 2005; Walters, Duncan, and Geyer, 2003), malingering, suicide risk, and aggression (Wang et al., 1997), malingering (Rogers, Sewell, Cruise, Wang, & Ustad, 1998; Rogers, Ustad, & Salekin, 1998), violence, psychosis, and personality disorder (Douglas, Hart, & Kropp, 2001); manipulativeness in female inmates (Salekin, Rogers, &

Sewell, 1997), criminal recidivism in female inmates (Salekin, Rogers, Ustad, & Sewell, 1998), sex offender institutional misbehavior and adjustment (Buffington-Vollum, Edens, Johnson, & Johnson, 2002; Caperton, Edens, & Johnson, 2004; Edens, Hart, Johnson, Johnson, & Olver, 2000). In this section, I discuss each behavior in turn.

Male institutional behavior. Wang and Diamond (1999) considered factors related to violence risk (anger, antisocial personality style, current violent offense, ethnicity, and impulsivity) in 385 offenders receiving psychiatric treatment in an adult male prison hospital. All participants in the sample had been hospitalized at least two months and had to be able to read at an appropriate level before they completed the BIS-11, the BPAQ, and the PAI Antisocial Features (ANT) and Aggression (AGG) subscales. Anger was measured with the BPAQ Anger and Hostility subscales, as well as the PAI AGG scale. Antisocial personality style was measured with offender age and the PAI ANT scale, as well as two of the PAI subscales (Egocentricity [ANT-E], and Stimulus seeking [ANT-S]). Impulsivity was measured with the BIS-11 Motor, Attentional, and Non-Planning Impulsiveness scales. Physical aggression was measured with the BPAQ Physical Aggression scale, PAI Physical Aggression (AGG-P) subscale, and number of institutional acts of physical aggression in the two months following assessment. Verbal aggression was measured with the BPAQ Verbal Aggression and the PAI Verbal Aggression (AGG-V) subscale. Responses on all three instruments were converted to *T* scores for comparability with each other and were compared to age, ethnicity, current violent offense, victim injury from current offense, and institutional incidents of physical and verbal aggression. Wang and Diamond's structural model indicated that anger, impulsivity, and antisocial personality style were more related to institutional aggression

than to ethnicity or offense history, and their findings accounted for most of the variance related to physical (94%) and verbal aggression (87%).

Wang et al. (1997) studied 334 PAI adult male profiles from individuals receiving or requesting mental health services at an inpatient psychiatric facility in the Institutional Division of the Texas Department of Criminal Justice. The purpose of the research was to determine the usefulness of the PAI in assessing problematic behaviors of malingering, suicidal threats and gestures, and aggression. The NIM, Suicidal Ideation (SUI), and Aggression (AGG) subscales were compared to the SIRS for malingering, a site-created Suicide Risk Assessment for suicidal ideation, and the OAS for aggression.

Wang and colleagues found that the PAI NIM scale was moderately correlated with the SIRS primary scales (r ranging from .32 to .52). The PAI SUI scale, when compared to the Suicide Risk Assessment, was moderately correlated with the number of serious suicide gestures ($r = .31$); it also separated patients with no suicidal behavior from patients with verbal suicidal threats that led to placement in more restrictive environments, as well as separated patients with no suicidal behavior who made serious suicidal gestures from non-suicidal behavior patients, including those who made but did not act on their verbal threats. The PAI AGG scales were also moderately correlated with OAS overall aggression score (for AGG-A, $r = .25$; for AGG-V, $r = .20$; for AGG-P, $r = .25$). The results were said to support the use of the PAI to assess these three problematic suicidal and parasuicidal behaviors.

Rogers et al. (1998) compared the PAI, especially the validity scales (INF, MIN, PIM, and INC), to the SADS, the SIRS, and the SPS. The authors used 122 inmates from a Texas jail who were randomly selected from the emergency referrals list for mental

health services, including 43 mental health patients who did not indicate any evidence of exaggeration or feigning on the SIRS as a supplemental analysis. Rogers and colleagues found moderate to good concurrent validity for three clinical areas: screening for feigned profiles, establishing clinical correlates of common disorders, and evaluating the potential for suicidal ideation. In addition, The PAI NIM scale was correlated with the majority of the SIRS scales (ranging from r = .40 to .70, with a median r of .61), excluding the SIRS Improbable and Absurd Symptoms (r =.43) and the SIRS Reported versus Observed Symptoms (r = .40) scales, which are not addressed by the NIM.

Using a cut-off score of NIM $\geq$ 10, Rogers et al. (1998) identified 10 of 16 (62.5%) of feigners and ruled out feigning in 41 of 43 (95.3%) of the mental health patients. However, the PAI infrequency and inconsistency scales (INF, INC) did not correlate with the SIRS Inconsistency (INC) scale. Comparing the PAI to the SADS, the authors found the strongest correlation was between the SADS depression constellation and the PAI DEP scale (r = .67). They also found moderate convergence between the SADS and ANX (r = .65), and between the SADS and the PAR (r = .53). The PAI SUI scale correlated moderately with suicide symptoms on the SADS (r = .63), and also with the SPS Suicide scale (r = .74). The authors suggested that the PAI has good clinical utility and that "ANX, DEP, PAR, NIM, and SUI scales continue to evidence solid convergent validity." (p. 10)

Rogers, Sewell, et al. (1998), in an attempt to determine indicators of feigned PAI profiles, compared simulators instructed to feign mental illness and genuine patient groups. They used data from Wang et al's (1997) study on 15 feigners and augmented it with additional data from the same setting (a corrections-based psychiatric facility) to

create a sample of 41 feigners and 15 genuine patients. In addition, data from Rogers et al.'s (1998) study was also used, adding additional 16 feigners and 43 genuine patients for a total of 57 feigners and 58 genuine patients, all male, and all meeting SIRS criteria for malingering. The authors applied the Rogers Discriminant Function (Rogers et al., 1996) to the entire sample, including the PAI Malingering Index, and the PAI NIM scale. Results indicated that the RDF may not be applicable to forensic patients, correctly classifying only 61.7% of the sample. However, for non forensic outpatients, the RDF correctly identified 87% of the outpatient sample. Convergent evidence was also found across groups (simulators and patients) and samples (forensic and non forensic) for very high elevations on NIM ($\geq 110T$), which identified 82% non forensic and 93% forensic outpatients, and for the Malingering Index ($\geq 5T$), which identified 92% non forensic and 100% of forensic patients. As the authors pointed out, however, only a small portion of feigners achieved such extreme scores. The optimal rule-out screen for forensic outpatients who were not feigning was determined to be the NIM scale, with a cut-off score $\geq 77T$, which correctly identified 69% of non-forensic and 83% of forensic outpatients.

Poythress et al. (2001) examined the relationship between psychopathy and malingering in a correctional study of 55 male inmates incarcerated in Florida by administering the Structured Inventory of Malingered Symptomology (SIMS; Smith & Burger, 1997), the SIRS, the PAI, and the PPI to assess psychopathy. The inmates were put in four groups: GN (general population, nonmalingering, instructed to answer honestly); GM (general population, instructed to malinger on all measures); CN (genuinely clinically mentally ill individuals admitted to the mental health unit, non-

malingering, instructed to answer honestly; and CM (clinical malingerers --- inmates admitted to the mental health unit diagnosed as exaggerating or feigning mental health symptoms). All inmates completed the PPI under standard instructions (i.e., to answer honestly) and then completed the other measures in random order. The GN, CN, and CM groups were instructed to answer honestly on all of the other measures; however, to reinstate motivation for the CM group to malinger, the CM group was advised that the SIRS and the PAI results would be shared with the mental health unit staff. The GM group was given brief instructions to answer the test questions so as to feign a major mental illness while preventing a psychologist from detecting feigned symptoms. Correlations between all malingering indices and the PPI were low and not significant, and they did not suggest that individuals with higher levels of psychopathy were better malingerers.

Edens et al. (2001) examined the PPI and PAI in postdicting institutional adjustment during the first year of incarceration, by using 89 inmates from a similar correctional setting (a prison in Florida) as Poythress et al. (2001), with 59 inmates from the prison general population and 30 inmates recruited from the prison psychiatric ward. All inmates completed the PPI and the PAI with standard instructions, except for 29 inmates who completed the PAI with instructions to malinger (see Poythress et al., 2001). PPI and PAI results were compared to inmate disciplinary reports, which were categorized into three classifications: Physical Aggression (PA), Verbal Aggression/Acts of Defiance (VA), and Non Aggressive (NA). Although the study was conducted primarily to determine construct validity for the PPI, the PAI ANT scale (using the 60 inmates not instructed to feign mental illness) significantly correlated as an index of

disciplinary infractions (PA: $r = .26$; VA: $r = .37$; NA: $r = .40$) and was a better predictor of an inmate getting any type of disciplinary reports ($r = .55$) than the PPI.

Walters, Duncan, and Geyer (2003) conducted a study of 149 forensic inmates who had been in the federal prison system for at least two years and who had completed an initial forensic assessment. The authors obtained scores on the PCL-R, which is an inventory completed by a clinician through interview and file review, and the PAI (which, as noted above, is a self-report measure). Both instruments had been completed during an initial assessment at the time of incarceration. The authors also obtained the disciplinary records of the inmates for 2 years subsequent to the forensic evaluation (disciplinary reports were scored as *present* if the individual had one or more during the 2-year follow-up, and then further divided into two categories, aggressive infractions or any infraction; they were scored as *absent* if there were no disciplinary reports). The PAI AGG and ANT subscales were used, as were scores on the PCL-R Factor 1 (interpersonal traits) and Factor 2 (socially deviant behaviors). The PAI AGG scale was significantly correlated with general disciplinary outcome; that is, as AGG scores increased, so did disciplinary maladjustment (both aggressive and non aggressive infractions). The authors also reported "equivalent outcomes" (p. 391) for the PAI and the PCL-R in predicting disciplinary infractions in a group of lower IQ adult males undergoing forensic evaluation. The authors suggested using the PAI, even though it is a self-report instrument, as a predictor of those forensic outcomes; they also suggested that forensic psychological evaluations begin incorporating self-report instruments when clinically appropriate, since the PAI produced findings "similar or superior to the PCL-R" (p. 391).

Walters et al. (2005) used the PCL-R and the PAI ANT and AGG scales in the prediction of post-discharge recidivism among 91 male forensic patients who had been evaluated between 1991 and 2000 and released to the community 2 to122 months after their evaluation. All patients had complete PCL-R and PAI data on file. Beginning from the time of the individual's release from custody, arrest and outstanding warrants for arrest records were compiled from the FBI's National Crime Information Center (NCIC) database. Arrest was scored as *present* if the patient had been arrested one or more times or had had an outstanding warrant posted for his arrest (45 patients; 49.4%) and *absent* if no arrests or warrants for arrest had been posted (46 patients; 50.5%). Results showed that the PCL-R Factor 2 ($r = .33$) and the PAI ANT ($r = .26$) and AGG scales ($r = .33$) successfully predicted release outcome after age, education, race, and prior arrests were controlled for in a two-step logistic regression analysis. Walters et al. suggested that self-report instruments like the PAI be included in forensic psychological evaluations because they predicted offender outcomes at a level comparable to some of the more popular risk appraisal instruments such as the PCL-R.

In Douglas, Hart, and Kropp's (2001) study of the complete medical and psychiatric records of 127 adult male inpatient psychiatric forensic patients, they found that the PAI demonstrated adequate clinical validity for predicting previous violence, a lifetime diagnosis of psychosis, and a lifetime diagnosis of personality disorder. Using a criterion groups strategy, Douglas et al. analyzed specified PAI scales using a hierarchical logistical regression analyses to determine if those scales predicted key domains of violence, psychosis, and personality disorder that had been correlated with extensive patient history. For the violence domain, the Physical Aggression (AGG-P)

scale predicted previous violence. For the psychosis domain, Social Detachment (SCZ-S), Grandiosity (MAN-G), and Treatment Rejection (RXR) predicted lifetime diagnosis of psychosis. For the personality disorder domain, Affective Instability (BOR-A) and AGG predicted lifetime diagnosis of personality disorder. The authors concluded that the PAI appeared to be able to discriminate some major conceptual dimensions in a forensic setting and that the above subscales, in addition to the overall scales, may be "significant predictors of important clinical constructs [that] help to direct assessment, management, or treatment resources" (p. 193) . Overall, the PAI seems to have some clinical utility for violence risk, including aggression, malingering, and suicidal threats, as well as some predictive value for disciplinary infractions with incarcerated offenders and previous violence, as well as predictive lifetime diagnoses of psychoses and/or personality disorder, and as such, may have utility for forensic evaluations with male inmates.

Female institutional behavior. Salekin et al. (1997) compared the PAI Antisocial scales (antisocial behaviors [ANT-A], egocentricity [ANT-E], and stimulus-seeking [ANT-S]) with the two factors assessed by the PCL-R – Factor 1 assesses interpersonal traits, and Factor 2 assesses socially deviant behaviors – and the Antisocial scales (narcissistic personality disorder [PDE-N], and antisocial personality disorder [PDE-A]) of the PDE using a multitrait-multimethod matrix with 103 female inmates incarcerated in Texas. Staff ratings of inmate aggressive and disruptive behavior in the institution were also compared to the psychopathy scales mentioned above to assess validity of the instruments. Salekin and colleagues found a lower prevalence of psychopathy (fewer symptoms, and lower severity of symptoms) in the PAI, The PDE, and the PCL-R than was found in past research with male samples, but they indicated that the construct of

psychopathy was applicable to female correctional samples and that the measures were acceptably valid (alpha coefficients for the PCL-R scales were .88 and .85, for Factors 1 and 2, respectively; the PDE alpha coefficients were Narcissistic Personality Disorder (NCS) = .72 and Antisocial Personality Disorder (ATS) = .87; and for the PAI scales, the alpha coefficients were .87 for ANT-E, .81 for ANT-A, and .84 for ANT-S). The PAI ANT-A scale and the A-PDE scale outperformed all other PAI, PDE, and PCL-R scales in predicting staff ratings of violence, verbal aggression, noncompliance, manipulation, remorse, and dangerousness (PAI ANT-A correlation range was r = .17 to .45; A-PDE range was r = .27 to .37). Salekin et al. suggested additional research with the correlates of psychopathy criteria (female psychopathy appears to be generalizable to the male construct of psychopathy, except with lower absolute rates of symptoms and lower severity of symptoms, and possible factor structure differences) over time to determine interrater reliability as well as temporal stability on the PAI, PDE and PCL-R, and also consider recidivism and dangerousness to determine if this relationship established with males is applicable to females.

Salekin et al. (1998) then studied criminal recidivism, as measured by re-incarceration, in female inmates, including 78 of the 103 inmates used in Salekin et al.'s (1997) study, at a 14-month interval. They administered the PCL-R, the PDE, and the PAI. The best predictors of future recidivism were the PAI Egocentricity (ANT-E) subscale (r = .88), the PCL-R Factor 1 scale (r = .85), and the PAI Verbal Aggression (AGG-V) subscale (r = .70), although classification accuracy was modest (r = .64 for both the PCL-R and the PAI). The authors suggested that verbal aggression, in addition to current definitions of psychopathy, may be the most appropriate predictor of recidivism

in female inmates. Overall, the PAI seems to also have some clinical utility for detecting female psychopathy, as well as predicting staff ratings of violence, aggression, manipulation, remorse, and dangerousness, and as such, may have utility for forensic evaluations with female inmates.

Sexual offender institutional behavior. Buffington-Vollum et al. (2002) studied 58 male inmates incarcerated in the Texas Department of Criminal Justice after conviction for at least one sexual offense. They administered the PAI ANT scale and the PCL-R in an attempt to predict institutional misbehavior among these offenders over a two-year follow-up period. Institutional misbehavior was defined as any major infractions of prison disciplinary offenses in three categories: physical aggression (PA), verbal aggression/acts of defiance (VA), and non aggressive offenses (NA), similar to Edens et al's (2001) study. Significant but moderate correlations were obtained for both the PAI ANT scale (r ranging from .36 to .40) and the PCL-R (r ranging from .37 to .40) with verbal aggression non aggressive offenses but not physical aggression, which was rare in this sample (r = .23 for both measures). Looking at incremental validity for the PCL-R and the PAI ANT, using suggested psychopathy cut-off scores (PCL-R $\geq$ 30, PAI ANT $\geq$ 70T), the PCL-R was better at predicting verbally aggressive disciplinary offenses (uniquely explaining 7.8% of the variance) but the ANT was better at predicting non aggressive offenses (7.3% of the variance).

Caperton et al. (2004) examined the relationship with institutional adjustment and treatment compliance for 137 male inmates incarcerated in the Texas Department of Criminal Justice after conviction of at least one sexual offense. The inmates had been participating for at least one year in the Sexual Offender Treatment program and had

completed a PAI as part of standard inmate evaluation procedures. The inmate PAI scores were correlated to disciplinary report categories similar to the studies conducted by Edens et al. (2001) and Buffington-Vollum et al. (2002); in addition, treatment noncompliance and sexual misconduct infractions were also correlated to the PAI. Results indicated that the ANT scale significantly predicted every subtype of infraction (r = .21) except for the infrequent treatment noncompliance and sexual misconduct categories, but no other scale provided incremental validity. The PAI RXR (Treatment Rejection) scale was modestly (r = .14) correlated with treatment noncompliance.

Edens et al. (2000) may have come the closest to addressing forensic applications with the PAI. Two groups were assessed using the PAI and the Psychopathy Checklist: 46 incarcerated sexual offenders (for whom psychopathy was assessed using the Psychopathy Checklist: Screening Version [PCL:SV; Hart, Cox, & Hare, 1995]) and 55 forensic psychiatric patients (for whom psychopathy was assessed using the PCL-R). Edens et al. found high concurrent validity of ANT with the PCL:SV total score (r = .54) and moderate validity with the PCL-R total score (r = .40). In both samples, the Factor 2 behavioral aspects of psychopathy (antisocial lifestyle, behavioral instability, etc.) had stronger correlations with the PAI ANT scale than did the Factor 1 interpersonal and affective aspects (callousness, etc.). Eden et al.'s results indicated that, despite concurrent validity, suggested ANT score cutoffs resulted in numerous classification errors in terms of diagnosis and reduced diagnostic efficiency into the low to moderate range, and they were unable to determine a clear ANT cutoff score that maximized diagnostic efficiency for identifying psychopathy. Using the PCL:SV or the PCL-R scores as categorical data, the ANT scale "does not appear to make categorical predictions of psychopathy on the

PCL: SV or the PCL-R with a great deal of accuracy." (p. 137), but the authors suggested that ANT and the other PAI scales may have other clinical applications, including detection of response distortion and other clinical information (substance abuse, aggression, etc.), and that it may be more effective as a dimensional rather than a categorical measure of this construct.

Although the PAI may not be able to accurately predict the categorical construct of psychopathy, it appears to have considerable clinical utility in a small number of research studies in both community and forensic/correctional settings, providing useful clinical information as discussed above.

Research on Specific Diagnoses

In addition to correctional/forensic and community studies, a small number of studies have been conducted regarding specific diagnoses suggested by the PAI by looking at either PAI profiles of individuals who had been given a particular diagnosis by a clinician or the PAI interpretive summary or profiles of individuals attempting to feign a specific disorder, including Posttraumatic Stress Disorder (PTSD; Calhoun, Earnst, Tucker, Kirby, & Beckham, 2000; Liljequist, Kinder, & Schinka, 1998; McDevitt-Murphy, Weathers, Adkins, & Daniels, 2005; Mosley, Miller, Weathers, Beckham, & Feldman, 2005; Scragg, Bor, & Mendham, 2000), substance use disorders (Fals-Stewart, 1996; Fals-Stewart & Lucente, 1997; Kellogg et al., 2002; Parker, Daleiden, & Simpson, 1999; Schinka, Curtiss, & Mulloy, 1994), Alcohol Dependence (Schinka, 1995a, 1995b), Borderline Personality Disorder (Bell-Pringle, Pate & Brown, 1997), and eating disorders (Tasca, Wood, Demidenko, & Bissada, 2002).

Posttraumatic Stress Disorder

Calhoun et al. (2000) looked at feigning of combat-related PTSD on the PAI, using 23 male veterans who had been diagnosed at an outpatient VA PTSD specialty clinic with combat-related PTSD. The responses of veterans were compared to two groups of simulators: 23 male introductory psychology undergraduates who were instructed to simulate PTSD and were equipped with copies of the *DSM-IV* (APA, 1994) criteria for PTSD, and 23 randomly selected males from the 480-person PAI standardization sample. Results indicated that 70% of the PAI summary reports for simulators included a suggested diagnosis of PTSD, but the NIM scale correctly identified 83% of the simulators using a cut-off score of 8. However, in the interpretive reports, 65% of the real PTSD patients were misclassified. The authors found no significant differences in the overall efficiency of the PAI for various cut-off scores with validity indexes to correctly detect overreporting, and the authors suggested caution when using the PAI to assess PTSD.

Liljequist et al. (1998) conducted a study of feigned PTSD on the PAI. They compared four groups: 29 veterans diagnosed with both PTSD and Alcohol Dependence, 30 veterans diagnosed with Alcohol Dependence but not PTSD, 27 undergraduate psychology males simulating PTSD, and 30 undergraduate students as controls. The student simulators generated PAI profiles significantly different from and higher than the PTSD-diagnosed veterans on seven scales: Anxiety (ANX), Anxiety-Related Disorders (ARD), Depression (DEP), Schizophrenia (SCZ), Borderline Features (BOR), Alcohol Problems (ALC), and Drug Problems (DRG). Only two scales (ARD and DEP) differentiated the veterans diagnosed with both PTSD and Alcohol Dependence from

veterans with an Alcohol Dependence diagnosis but no PTSD diagnosis, with the average scores on both the ARD and DEP scales being significantly higher for the latter group.

Scragg et al. (2000) conducted a study of feigned PTSD on the PAI. Participants consisted of three groups: 25 workers from a management consultant company who were instructed to feign PTSD and who were given *DSM-IV* (APA, 1994) criteria for PTSD, 19 patients who had been diagnosed with PTSD by the first author and who were being treated at the Traumatic Stress Clinic in London, and 22 participants from a media company used as honest controls. The simulators tended to over-report on several scales: mania (MAN), paranoia (PAR), SCZ, antisocial personality (ANT), and ALC. However, their scores on somatic complaints (SOM), ARD, PTSD, and DEP scales were similar to the clinical comparison group. The PAI validity scales were useful for detecting approximately 50% of the simulators' profiles as feigned, and the Negative Impression Management (NIM) cut-off score of 85*T* provided excellent specificity (i.e., none of the PTSD-diagnosed individuals were classified as malingering).

McDevitt-Murphy et al. (2005) directly addressed the clinical utility of the PAI for assessing PTSD by comparing the PAI to instruments designed to assess PTSD, including the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995), the Life Events Checklist (LEC) and interview, Impact of Event Scale-Revised (IES-R; Weiss & Marmar, 1997), the PTSD Checklist (Weathers et al., 1993), and the Civilian Mississippi Scale (CMS; Vreven, Gudanowski, King, & King, 1995). The sample consisted of 55 adult females who had experienced at least one traumatic life event. The participants were residents of a small southeastern city who were recruited thorough flyers and newspaper advertisements and reimbursed $100 for participation. A total of 14 females

met CAPS criteria for PTSD; those 14 participants were diagnosed with PTSD and their PAI profiles were compared to profiles of the 41 non-PTSD participants. Large differences between PTSD and non-PTSD participants were found for the PAI DEP (r = .61) subscale, Borderline Features (BOR) subscales (r = .50), and the Traumatic Stress (ARD-T) subscale (r = .59) for the 14 participants diagnosed with PTSD. Moderate correlations were found for the following scales and subscales: ANX (r = .49), ARD (r = .49), NIM (r = .49), PAR (r = .42), SOM (r = .38), SCZ (r = .41), Nonsupport (NON; r = .30), and Treatment Rejection (RXR; r = .38). The PAI ALC and Drug Problems (DRG) scales did not differentiate the groups, probably due to the small prevalence of substance use in the sample.

Mosley et al. (2005) looked at PAI profiles from 176 PTSD-diagnosed veterans residing in the community to assist in developing a descriptive PAI profile for PTSD, to examine the PAI Traumatic Stress (ARD-T) subscale for sensitivity and construct validity, and to compare PAI and MMPI-2 mean profiles. In addition to the PAI and the MMPI-2, all participants completed the Combat Exposure Scale (CES; Keane et al., 1989), the Mississippi Scale for Combat-Related PTSD (Keane, Caddell, & Taylor 1988), the Davidson Trauma Scale (DTS; Davidson, 1996), and the BDI to provide construct validity. Mosley et al. found overall significant elevations on PAI DEP, SOM, ANX, ARD, SCZ, and NIM scales. ARD-T was the highest elevated subscale and it was determined to be both valid and sensitive; it was moderately significantly correlated with the Combat Exposure Scale, MMPI-2 PTSD scales, the Mississippi PTSD scale, and the Davidson Trauma Scale. The authors suggested the use of the ARD-T as a supplemental measure of PTSD. Clinically significant elevations (above 70*T*) on other scales also

included somatic conversion (SOM-C); cognitive, affective, and physiological signs of depression (DEP-C, DEP-A, and DEP-P); affective and physiological signs of anxiety (ANX-A and ANX-P); social detachment (SCZ-S); thought disorder (SCZ-T); physical aggression (AGG-P); health concerns (SOM-H); somatization (SOM); and affective instability (BOR-A). The authors found no clear codetype of PTSD on either the MMPI-2 or the PAI. Response validity for malingering and NIM provided results similar to Calhoun et al.'s (2000) study; that is, the authors suggested that lower cut-off scores would more effectively identify compensation-seeking veterans. Clearly, additional research is needed to determine optimal cut-off scores for malingering PTSD.

Although the PAI should be used with caution, there is some research that suggests that some PAI subscales may be useful in assessing PTSD.

Substance Use Disorders

Fals-Stewart (1996) conducted a study to assess whether individuals diagnosed with psychoactive substance use disorders could escape detection on the PAI. Participants came from four subgroups. The first consisted of 70 individuals whose primary drug of choice was not alcohol, caffeine, or nicotine and who were receiving inpatient psychoactive substance use treatment, and the second subgroup consisted of 48 similar individuals receiving outpatient treatment. A third subgroup was comprised of 59 individuals referred for a forensic chemical dependency evaluation, and the fourth was composed of 59 additional nonclinical control participants. The individuals receiving treatment for chemical dependency were then assigned randomly to either a positive dissimulation group instructed to deny any current or past substance problem at all or a standard administration treatment group who completed the PAI under standard

instructions (both groups had 59 participants). The other two participant groups (the nonclinical control group and the forensic group) completed the PAI under standard instructions, but the latter group did so as part of an evaluation ordered by the criminal justice system and therefore had reason to conceal substance use.

Results indicated that the positive dissimulation and forensic groups were able to successfully feign scores in the normal range. The standard administration group who self-identified as needing treatment had, as expected, clinically significant elevated Drug Problems (DRG) and Alcohol (ALC) scores, but some of the nonclinical sample (n =18; 31%) also produced elevated scores. This result suggested that discrimination between current and past substance use, as well as the DRG and ALC cutoff scores of T>59, may not be specific enough to discriminate between individuals with a current substance use problem and those with past use of substances. This lack of specificity may lead to a categorization of any substance use as abuse. Using the calculation of true-positive test results plus true-negative test results divided by the population sample to determine the hit rate, the authors compared different cutoff T scores for intentional feigning, using the Positive Impression Management (PIM) scale. This comparison produced mixed results. Using the lower, more sensitive cut-off rate of T>56 led to an 84% hit rate but 19% false-positive errors. Using the specific cut-off of T>67 resulted in a lower hit rate of 72% but a high false-negative rate of 51%. The author suggested an optimal weighted multivariate of the DRG, ALC, and PIM scales as an alternate to classify participants instead of recommended clinical cutoffs, because the DRG, ALC, and PIM scales correctly identified 82% of the sample.

Fals-Stewart and Lucente (1997) evaluated the Fals-Stewart (1996) classification just discussed in an attempt to cross-validate the algorithm for identifying positive dissimulation of substance-abusing individuals on the PAI. Groups similar to the Fals (1996) study above were used, but each of the four groups had 25 participants. Although the Fals-Stewart classification correctly identified over 84% of the substance-abusing sample who completed the PAI with standard instructions, it was significantly less accurate in identifying participants in the other three groups (60% of the combined feigning sample groups and 64% of the non-clinical control group).

Kellogg et al. (2002) compared the PAI Drug Problems (DRG) scale with the Addiction Severity Index (ASI; McLellan et al., 1992), in individuals with positive urine toxicology reports at the time of the study. They compared the PAI DRG scores of 100 substance-using individuals who had recent positive toxicology reports for opiates, cocaine, marijuana, and/or methadone with the DRG scores of 100 individuals with negative urine toxicology reports and no substance abuse history. In addition, the researchers compared the DRG scores of methadone patients who had been in treatment less than a year with scores of those who had been in treatment for more than a year, and they also examined the relationship between the Drug Composite scores and the Drug Severity ratings of the ASI and the PAI DRG scale.

The authors found significant agreement with the suggested drug use cutoff scores in Morey's (1991, 1996) guidelines, and excellent sensitivity and specificity for DRG cut-off scores of 60*T*, 70*T*, and 80*T*. A DRG score of 60*T* or higher indicates problems related to drug use, and, using this cutoff, 92% of the drug users and 14% of the non-drug users were identified. A DRG score of 70*T* or higher indicates probable diagnosis of

substance abuse, and 78% of drug users and only 1% of non-drug users were identified. A DRG score of 80*T* indicates a substance dependence diagnosis, and 62% of drug users and no non-drug users were identified. Kellogg and colleagues found significantly higher DRG scores for methadone patients who had been in treatment for less than a year than for those who had been in treatment for more than a year. They also found significant correlations between the PAI DRG scale and the ASI Drug Composite scores (r = .61) and Drug Severity rating (r = .67) based on the scores of the drug-using population, and an even higher correlation when the sample was combined with the normal control group (r = .81 and .86, respectively).

Parker, Daleiden, and Simpson (1999) also compared the ASI to the PAI DRG and ALC scales and to the discharge diagnosis for 103 male veterans in a VA residential chemical dependence treatment center for convergent and discriminant validity of the PAI DRG and ALC scales. They found that the results supported the convergent validity of the PAI ALC and DRG scales in relation to the respective ASI Alcohol Composite (r = .49) and Drug Composite scores (r = .39), and to the alcohol-related or drug-related substance-use diagnosis of the individual (both r = .47, respectively). The ALC scale and the ASI Alcohol Composite score also had very good discriminant validity (r = .49) relative to all other PAI clinical scales, exceeding the correlations between these scales and other ASI and PAI scores. The DRG scale and the ASI Drug Composite score had adequate but variable discriminant validity on DRG scores (r = .39) probably due to a very large score variability (obtained range = 31, maximum possible = 36). The DRG-ASI Drug Composite correlation was not greater than the PAI DRG-ASI Psychiatric Composite, the PAI DRG-ASI Social/Family Composite, and the PAI Mania (MAN)-ASI

Drug Composite correlations on a dependent samples *t* test - the only three of a possible 16 possible discriminant correlations to differ from convergent correlation between the DRG and ASI Drug Composite score. The authors suggest caution when interpreting clinical elevations when DRG is significantly elevated.

Schinka, Curtiss, and Mulloy (1994) conducted a study to examine the "self-medication hypothesis" (p. 413); that is, that some drug-dependent individuals use a drug of choice for specific personality/affective states. Participants were 238 inpatient male veterans at a substance abuse treatment program in a VA medical center. Of the 238 participants, 159 patients had been diagnosed with alcohol dependence, 22 patients with cocaine dependence, 33 patients with both alcohol and cocaine dependence, and 24 patients with polysubstance abuse. All completed the PAI within seven days of entering the program. The PAI profiles were analyzed to examine group differences in symptoms and personality traits. The authors found that scores on PAR, ANT, and SOM scales were in the clinically significant range. They also suggested that certain traits or symptoms separated various groups, hypothesizing that scales may have been elevated secondary to drug use (e.g., elevated scores on PAR suggest hypervigilance and suspiciousness, common with drug users; elevated SOM scores may reflect increased health issues related to polydrug use; elevated ANT scores may be related to the sensation-seeking and impulsivity in accessing illegal drugs). Traits that would have associated PAI scores according to the self-medication hypothesis were not elevated in this sample; for example, PAI scales that would indicate mood issues (ANX, DEP, etc.) did not discriminate groups, and the author's conclusions were that the self-medication hypothesis was not supported in this sample.

Schinka (1995a) examined PAI profiles for 301 male patients diagnosed with alcohol dependency who were in an inpatient substance abuse program. The participants completed an administration of the PAI within seven days of entering the program. Schinka found in factor analyses that PAI scale characteristics paralleled Morey's (1991) characteristics for a large clinical sample (1,246 patients from varied settings and diagnoses), although Schinka also found a factor involving interpersonal style (coolness, mistrust, and social distancing) associated with more severe forms of severe psychological dysfunction, which may impact group and peer interaction treatment modalities. Schinka (1995b) also developed a PAI profile of alcohol-dependent patients, using the same sample. The author found a typology of seven clusters: Depressed, Antisocial Acts, Personality Disorder, Dysphoric, Somatic Concerns, Normal, and Distressed. All profile types had the highest elevation on the ALC scale. Schinka suggested that the seven clusters described by the PAI structure may have useful features and descriptors with clinical value.

Borderline Personality Disorder

Bell-Pringle et al. (1997) compared the MMPI-2 and the PAI for classification of the diagnosis of Borderline Personality Disorder (BPD). Their clinical group consisted of 22 inpatient females who had been diagnosed with BPD from two metropolitan hospitals in Atlanta, Georgia; these women were matched by ethnic characteristics with 22 introductory psychology students from a large southeastern urban university. All participants completed the short form of the MMPI-2 and the standard version of the PAI. Individuals with MMPI-2 codetypes of 8-4-2, 8-2-4, or 8-2-7, that is, high scores on Depression, Psychopathy, Psychasthenia, Schizophrenia clinical scales, or a PAI BOR *T*

score of ≥70 were categorized as having a BPD profile. The classification of BPD patients as meeting criteria for the BPD profile using the PAI was more accurate (18 of 22 patients identified) that the classification of patients for the BPD profile using the MMPI-2 (2 of 22 patients identified). The classification of students as not meeting criteria for the BPD profile, however, was somewhat more accurate with the MMPI-2 (21 students identified) than with the classification of not meeting the BPD profile of the PAI (17 students identified). The authors suggest these results should be interpreted with caution, for several reasons: female college students may not be a representative sample, the authors did not use a screening tool to ensure the comparison group was not diagnosable with BPD, there was a significant age difference between the patient and student samples, the inpatient sample may not generalize to outpatients, and finally, there was a small sample size.

Eating Disorders

Tasca et al. (2002) conducted a study of the PAI with 238 females being treated on an outpatient basis at an eating disorders treatment center. This appears to be the first published study looking at the PAI with this population. Tasca et al. used a research design similar to Schinka's (1995b) study on PAI profiles on alcohol-dependent patients, to generalize a PAI profile and determine group differences between individuals diagnosed with one of four disorders: Binge Eating Disorder (BED); Anorexia Nervosa , restricting subtype (AN-R); Anorexia Nervosa, binge-purge subtype (AN-B); and Bulimia Nervosa (BN). Although the overall eating disorder sample is significantly smaller than Morey's (1991) clinical sample of eating-disordered individuals in terms of reliability, the alpha coefficient was still above .70, considered by the authors to be

acceptable for internal consistency, and acceptable reliability for use with this population. The factor structure was similar to Morey's sample of eating-disordered individuals, with the addition of another factor related to interpersonal coolness and distance (similar to Schinka's [1995a] finding). The BED group was significantly less distressed and reported less impairment than each of the other groups. The other three groups were not significantly different from each other, although the BED and BN groups differed significantly in frequency of matching on increased scores on PAI Cluster 5 (acute reaction to current stressors) and decreased scores on PAI Cluster 7 (severely depressed, anxious, and agitated). The authors suggested that those who binge eat (BN and BED) may report more stress, have greater sensitivity to relationship issues, and may be clinically expected to have better treatment outcomes than those who restrict their food intake (AN-R and AN-B).

Purpose of the Present Study

In a literature review of the forensic and correctional applications of the PAI, Edens, Cruise, and Buffington-Vollum (2001) reported that "almost none of the published research has attempted to examine the diagnostic utility of interpretive strategies or decision rules other than clinical cut offs associated with full-scale scores" (p. 540) and they recommended more research concerning predictive validity and association with outcome variables.

Morey and Quigley (2002) conducted a review of the PAI in forensic assessment and stated that research regarding forensic application of the PAI was "in its infancy" (p. 346). They recommended that researchers, "continue to expand its empirical database so

that participants, both mental health and legal professionals, have a more clear understanding of the results and implications of our assessments" (p. 346).

Research is needed to compare PAI and clinician-established diagnosis for clinical practice information as well as to further the research base on the PAI. Diagnostic and conceptual congruence of clinicians with the PAI in determination of diagnoses (i.e., psychosis, personality disorder, substance abuse problems, depression, and anxiety) are of relevance to assessment and treatment. The purpose of the present study was thus to assess the congruence of clinician diagnoses and diagnoses generated by the PAI interpretive software in a mixed-gender forensic population.

No researchers to date have compared congruence of the PAI-informed diagnoses with clinician-established diagnoses in any population. As suggested by the Edens et al. (2000) study assessing psychopathy (and granting that psychopathy is not a diagnosis in a formal diagnostic system), questions of diagnostic utility with the PAI clearly exist.

METHOD

The purpose of this study was to answer the following research question: In the forensic population at Oregon State Hospital (OSH), how congruent are PAI-informed diagnoses and clinician-established diagnoses? To compare clinician and PAI diagnoses, I used a comparative retrospective design. The diagnoses contained in the PAI summary in test data gathered by the OSH Psychology Department during the 35 months prior to the date of the study (August 2000 to July 2003) were compared with past, current, and discharge diagnoses from OSH records for all patients who had taken the PAI during that time period.

Setting

According to the OSH overview brochure (OSH, 2003), the hospital provides psychiatric evaluation and diagnosis as well as intermediate and long-term inpatient care for adult specialty populations, and it is the primary long-term treatment facility for forensic patients in Oregon. OSH provides hospital and residential services for a total capacity of 671 patients at two locations – Salem and Portland. Adult therapeutic services at OSH are divided into three categories: Forensic Evaluation and Treatment Services (FETS), Forensic Rehabilitation and Treatment Services (FRTS), and Adult Treatment Services (ATS).

The FETS program, 191 hospital-level beds on six units, is home to a majority of criminal defendants who have been adjudicated guilty except for insanity (GEI) and who were committed to the jurisdiction of the Psychiatric Security Review Board (PSRB) for the maximum duration of their sentence. Approximately 75% of defendants found to be

GEI are initially placed in OSH, and the rest are released to the community with a plan for treatment and monitoring, also under the jurisdiction of the PSRB (personal communication, Mary Claire Buckley, October 21, 2005). This FETS program also provides services for some civilly committed patients deemed to be either too dangerous or too difficult to manage in less restrictive and less secure general inpatient psychiatric hospital programs. Additionally, this program provides outpatient evaluations of criminal responsibility, including legal insanity, partial responsibility, and extreme emotional disturbance, as well as evaluations of competency to stand trial and sexual dangerousness. The evaluations are completed at the hospital, typically in one day. Approximately 120 such evaluations are completed per year.

The FRTS program, with a capacity of 213 patients on six units, provides specialized rehabilitative hospital and residential services to PSRB patients whose psychiatric conditions have substantially improved and who require a less restrictive environment in preparation for their release. The ATS program, with a capacity of 133 patients (65 at OSH-Salem and 68 at OSH-Portland), provides services for severe and persistently mentally ill patients referred from acute care hospitals, for intermediate and long-term care. These patients are typically civilly committed.

PAI Administration

The PAI is routinely administered to patients by clinical psychologists. Admission and discharge testing, annual assessments to aid treatment planning, and significant decreases in psychological or behavioral functioning as determined by patient treatment teams often generate PAI administrations, as do some forensic outpatient evaluations

conducted in the evaluation service. Most patients at OSH complete a PAI at least once during hospitalization or FETS evaluation.

Participants

Data were collected for all OSH patients who had completed a PAI during the period of August 10, 2000, to June 18, 2003. All patients were included, regardless of diagnosis, treatment, age, date of admission, gender, or commitment status. Individuals assessed by the OSH Forensic Evaluation Service staff who were being evaluated for competency to stand trial for criminal activity were also included. Data for patients who produced invalid protocols due to unlikely or incomplete responses on the PAI protocol were excluded, as were data for patients for whom there was no clinical assessment made within a reasonable time (120 days) of the PAI administration.

A total of 132 PAIs were initially obtained. Based on the above criteria, data for 34 patients were excluded due to invalid PAIs (25 were so invalid that no suggested diagnoses were hypothesized, and 9 were excluded because the validity scales suggested that the diagnostic hypothesis, although provided, may be invalid). Data for 29 patients were excluded due to length of time between assessment and PAI administration. This left a total of 69 participants for final analysis.

Of these 69 patients, 47 were male and 22 were female. The sample was predominantly Caucasian, with 5 Black, 4 Hispanic, 3 Native American, and 1 Vietnamese patient. The ethnicity of 5 individuals was unknown. The age of the patients ranged from 18 to 61 years, with a mean of 36.86 years. The formal education of the patients ranged between 2 years to 18 years, with the mean of 11.03 years. The educational level of 4 patients was unknown. A total of 36 of the patients were assigned

to FETS, 15 patients each were assigned to FRTS and FES, and 3 patients were assigned to ATS. Collateral diagnostic documents included the following: 15 Admission Histories, 14 Court-Ordered Evaluations, 13 Discharge Summaries, 9 Physician Progress Notes, 9 Interdisciplinary Annual Reviews, 8 Report To Court notes, 1 Ninety-day Treatment Team Review, and 1 Baseline Psychology Assessment. The disciplines of clinicians evaluating the patients included psychiatry (39 patients), psychology (21 patients), and social work (9). It is unknown if the clinicians used PAI suggested hypotheses in their diagnosis.

Collection of Data

Collection of PAI information and clinician diagnosis was completed by current off-duty OSH staff, whose services were paid for by the primary researcher. All chart access was authorized by the OSH Psychology Department, and no other patient information except as mentioned below was collected.

PAI Information

The patient's OSH number, date of birth, ethnicity, date of assessment, age at assessment, and any other confidential information (e.g., unit assigned; accommodations for testing, if any) from the PAI summary were recorded on a separate sheet with the use of a code number. All identifying characteristics were removed from the PAI summary and replaced by that code number, creating a censored PAI summary prior to receipt by the principal investigator and prior to data analysis. This procedure allowed data analysis to be performed off campus with no breach of confidentiality.

Specific data obtained from the PAI protocols were scores on scales in all four PAI domains (Validity, Clinical, Treatment, and Interpersonal) and the interpretive report (including the suggested diagnoses). For 2 patients who had taken the PAI twice, both PAI summaries were compared for diagnoses at two different points in time.

Clinician Diagnosis and Demographic Information

Clinician diagnoses and basic demographic information were collected from computer databases. The patient's OSH number, date of birth, and any other distinguishing characteristics were recorded on a separate sheet of paper with the use of a coding number as was described above regarding the PAI data. Information gathered from the patient assessments included all Axis I and Axis II diagnoses from the Discharge Summary, the most recent Interdisciplinary Annual Review, Psychology Baseline Assessment, or Admission History; the specific date of assessment; and the discipline (psychology, nursing, social work, or psychiatry) of the assessor. If the patient had only been seen by the Forensic Evaluation Service and had not been admitted to OSH, the Forensic Evaluation report was used to obtain diagnoses. All diagnoses were coded numerically according to the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision* (*DSM-IV-TR*; American Psychiatric Association, 2000).

Demographic data were also collected, including gender, ethnic group, and years of education. All personally identifying information was removed from the diagnosis/history summary prior to being received by the research team and prior to data analysis, allowing data analysis to be performed confidentially off-campus.

Data Analysis

The collected data (suggested PAI diagnoses and the clinician diagnoses), were placed side by side on a Diagnostic Comparison Worksheet, designed specifically for this study (shown in Appendix B). This form allowed examination of both Axis I and Axis II diagnoses for similarity. PAI and clinician diagnoses were compared using the following system: (a) exact match, (b) close match (very similar diagnosis), or (c) not matched. All Axis I and Axis II diagnoses suggested by the PAI were compared to all diagnoses made by clinicians according to the protocol for matching diagnoses shown in Table 1.

The matching protocol was as follows: An *exact match* was determined to be the same Axis I or Axis II disorder or the same V-code, regardless of whether the diagnosis was labeled as provisional or a rule-out diagnosis or a diagnosis made by history, or whether there was an additional specifier. For example, a rule-out diagnosis of 296.40 Bipolar Disorder Disorder, Manic, was considered to be an exact match with 296.6 Bipolar Disorder, Mixed. Substance Abuse and Substance Dependence were also defined to be an exact match, regardless of the specific substance. For example, 305.90 Other Substance Abuse was considered to be an exact match with 305.50 Opiate Abuse. However, Alcohol Abuse and Alcohol Dependence were not considered to be exact matches with each other because they are more clearly differentiated by the PAI than are diagnoses related to other substances (Opiates, Cannabis, etc.).

A *close match* was defined for Axis I diagnoses as the same disorder regardless of nature of episode and on Axis II as the same personality disorder versus traits of the same personality disorder. For example, 296.89 Bipolar Disorder II was considered a close match with 296.6x Bipolar I Disorder, Mixed. Also, because both Bipolar I and Bipolar II

Disorders resemble Cyclothymia due to frequent marked shifts in mood, all of these disorders were also considered a close match to each other. Somatoform Disorders were classified as a close match to any other Somataform Disorder, regardless of the criterion specifying a physical symptom not explained by a general medical condition generating the somatization. Alcohol Dependence and Alcohol Abuse, and any Substance Dependence or Substance Abuse, regardless of type of substance, was classified as a close match due to the presence of a maladaptive pattern of substance use.

Table 1

Protocol for Determination of Match of PAI-Suggested Diagnosis versus Clinician Diagnosis

Match	PAI	Clinician Diagnosis
Exact match	rule-out Personality Disorder	same Personality Disorder Traits
	same disorder	same disorder by history
	Additional Clinical Factors (V-codes)	Additional Clinical Factors (V-codes)
	XXX disorder, Single Episode, Unspecified	same disorder, Single Episode, Specified Features
	Other Substance Dependence [304.90]	any Substance Dependence, excl. Alcohol Dependence [303.90]
	Other Substance Abuse [305.90]	any Substance Abuse, excl. Alcohol Abuse [305.00]
Close match	Specific Personality Disorder NOS [301.9]	Same Personality Disorder Traits
	same disorder, Single Episode, Unspecified	same disorder, Recurrent Episodes, Specified Features
	Bipolar Disorder [296.xx]	Cyclothymic Disorder [301.13]
	any Somatoform Disorder [300.xx]	any Somatoform Disorder [300.xx]
	any Bipolar I Disorder [296.xx]	Bipolar II Disorder [296.89]
	Alcohol Dependence [303.90]	Alcohol Abuse [305.00]
	Other Substance Dependence [304.90]	any Substance Abuse Disorder

RESULTS

PAI diagnostic congruence was divided into three categories: (a) exact match, (b) close match, and (c) no match, as described in the prior section. Out of 69 cases, 363 total PAI-informed diagnoses and 286 clinician-established diagnoses were generated. Deferred diagnoses were removed from the total, which left 294 PAI diagnoses and 274 clinician diagnoses (at times the PAI would suggest a diagnosis that would match more than one clinician diagnosis). Diagnoses were compared in two ways: first, by starting with the PAI-generated diagnoses and then attempting a match with clinician diagnosis and, second, by completing the process in reverse order. For the PAI-generated diagnoses, there were 73 (24.8%) exact match diagnoses, and 36 (12.2%) close match diagnoses. Adding these values together provided a total PAI congruence of 37%. The clinician-established diagnoses as compared with the PAI-generated diagnoses resulted in 77 (28.1%) exact match diagnoses and 42 (15.3%) close match diagnoses, for a total clinician congruence of 43.4%. The disparity in congruence for these two approaches can be explained by the matching process and the fact that more PAI diagnoses were available for matching than were clinician diagnoses. As noted above, at times the PAI would suggest a diagnosis that would match more than one clinician diagnosis. For example, the PAI might suggest 305.90 Other Substance Abuse, and the clinician diagnoses that were matched were 305.20 Opiate Abuse and 305.20 Cannabis Abuse. The timeline between the PAI-informed diagnoses and the clinician-established diagnoses from the clinical interview was also recorded. As shown in Table 2, the most congruent diagnoses from clinician interviews were those closest in time to the PAI administration,

with over half of the accumulated total congruence within 10 days between clinician interview and PAI administration.

Table 2

Timeline of PAI-generated exact and close diagnoses matches by days after clinical interview and accumulated total matches

Days from Interview	Exact Match	Close Match	Total Matches	% Matched
0 (same day)	24	10	34	31%
1-10	12	12	58	53%
11-30	17	3	78	72%
31- 90	17	9	104	95%

Table 3 depicts the total or absolute number of matches for each of the PAI diagnostic categories that matched with a clinician diagnosis. However, the absolute number of matches for a given diagnostic category is dependent upon the base rate of the diagnosis in this sample; that is, a diagnosis that was made frequently had more potential matches than a diagnosis that was made infrequently. To address this issue, the relative number of matches per diagnosis was derived by calculating the percentage of actual matches for a given diagnosis relative to the total number of times the diagnosis was suggested on the PAI interpretive report. This value is also reported in Table 3.

As indicated in the table, diagnoses that matched most frequently were substance use disorders and personality disorders, particularly the non-specific diagnoses such as

Other Substance Dependence [305.90] and Personality Disorder NOS [301.9]. Although the spectrum of substance disorders was well represented, no other specific personality disorders besides Antisocial and Borderline Personality Disorders were represented in this sample, and both of those were exact matches. Mood disorders, and then psychotic disorders, were the next most frequently matched diagnoses.

Clinician-generated diagnoses that tended not to match PAI diagnoses were cognitive and/or attentional disorders such as ADHD (6 patients, 0 matches), Borderline Intellectual Functioning (3 patients, 0 matches), and Mild Mental Retardation (2 patients, 0 matches). Personality disorders due to a medical condition (5 patients, 0 matches), and sexual disorders such as Fetishism, Paraphilia, and Pedophilia (5 patients, 0 matches) also tended not to match.

Finally, Table 4 shows the percentages of matched PAI diagnoses that were made by discipline. The matches were generated by psychology (46%), psychiatry (41%), and social work (13%), although it is possible that the percentage of matches from the psychology discipline may be higher, as the data collection did not include possible referrals (i.e., a psychiatrist or a social worker may have referred PAI administration to a psychologist and quoted the psychologist diagnoses in that psychiatrist or social work report). Psychology had matching diagnoses with the PAI for 53.6% of the 110 total diagnoses offered. Social Work matched 52.7% of the total diagnoses offered with 36 diagnoses, and Psychiatry matched 30.6% with 137 total diagnoses.

Table 3

Clinician diagnoses and PAI summary exact and close match totals and percentages of diagnoses that matched

Diagnosis	Exact Match	Close Match	Total	Match%
Other Substance Dependence [305.90]	8	8	16	80%
Alcohol Dependence [303.90]	8	3	11	73%
Antisocial Personality Disorder [301.7]	10	0	10	71%
Alcohol Abuse [305.00]	7	3	10	71%
Other Substance Abuse [305.90]	5	1	6	67%
Schizoaffective Disorder [295.70]	2	2	4	67%
Schizophrenia, Paranoid Type [295.30]	2	3	5	63%
Borderline Personality Disorder [301.83]	7	0	7	50%
Cyclothymic Disorder [301.13]	1	1	2	50%
Personality Disorder NOS [301.9]	10	3	13	38%
Major Depressive disorders [296.3x]	4	5	9	38%
Dysthymic Disorders [300.4]	2	5	7	37%
Bipolar Disorders [296.4x]	2	2	4	22%

Table 4

Clinicians by discipline and exact and close matches and percentages of total congruence

Clinician	Total Dx	Exact Match	%	Close match	%	Total Congruence
Psychology	110	37	33.6 %	22	20.0%	53.6%
Social Work	36	9	25.0 %	10	27.7 %	52.7%
Psychiatry	137	31	22.6 %	11	0.08%	30.6%

DISCUSSION

Research Hypotheses

The findings of this study clearly do not support the first hypothesis that diagnoses generated by PAI interpretive software, suggested by the configuration of PAI scale scores, would be congruent with most clinician-established diagnoses. The congruence between the PAI and clinician diagnoses was 37%, meaning that just over one-third of the diagnoses could even roughly be considered a match. These results are surprising, given that the author of the PAI manual noted that the PAI scales "have been found to associate in theoretically concordant ways with most major instruments for the assessment of diagnosis and treatment efficacy" (Morey, 1996, p. 18).

However, Morey (1996) also recommended that the suggested *DSM-IV* diagnostic possibilities generated by the PAI scale configuration be considered only as a hypothesis and that all available sources of information are considered prior to establishing a diagnosis. Morey (2003) stated that configural interpretation of the test may result in different diagnostic considerations due to subscale configurations and that "...two identical elevations on a particular scale may be interpreted differently depending on the configuration of the subscales" (p. 71). Perhaps the difference between PAI scale configuration and the subtleties of clinician interview may partially account for reduced diagnostic congruence with the PAI-generated diagnostic hypotheses. Rogers (2003) recommended that the PAI should not be considered a diagnostic measure, because the PAI does not formally evaluate the *DSM-IV* inclusion and exclusion criteria, but only assesses useful patterns of psychopathology that are related to *DSM-IV* diagnoses. He

cautioned that PAI-generated results may only augment *DSM-IV* diagnoses from structured and clinical interviews. Edens et al. (2001) noted that the "diagnostic accuracy of many scales in forensic and correctional settings is either unknown or is known to be rather modest." (p. 540). Edens and colleagues also pointed out that, ethically, examiners should not rely on the PAI or any one test to render a clinical diagnosis.

Also the *DSM-IV* diagnostic categories themselves are not disorder-specific and inclusive; that is, different diagnostic codes and categories can be chosen with the presentation of similar symptoms. Initial patient assessment, without the luxury of significant time to determine the nuances of an individual's personality and mental health, can generate different specific diagnoses. For example, a patient who presents with anxiety, difficulty concentrating, and concerns of "going crazy," could be diagnosed with a substance-induced disorder, a psychotic disorder, or an anxiety disorder by three different clinicians during a similar time period.

Another consideration is the expertise and specialization of the clinician. The clinical biases of different mental health professionals, based on experience and training, may influence the clinician conceptualization of the patient assessed. A clinician with less academic and clinical experience (e.g., a social worker with less than a year of experience) may diagnose a patient far differently than an experienced clinician trained in psychological assessment (e.g., a clinical board-certified forensic psychologist with many years of experience).

Assuming that diagnostic instruments are associated with diagnostic systems such as the *DSM-IV* (APA, 1994) and that clinicians make diagnoses based on such systems as well, Morey's (1991) statement suggests that the PAI should correlate with clinician

diagnosis as well as with other instruments. Perhaps results on other instruments might not have correlated highly with the PAI profiles in this sample. However, because I did not obtain data from other instruments, the level of association between the PAI profiles in this sample and other major diagnostic instruments was unknown. Alternatively, it is possible that the PAI may associate with other assessment instruments but that clinicians do not diagnose in accordance with these other instruments either.

The second hypothesis (i.e., that the most congruent diagnoses would be assigned closest in time to the administration of the PAI) was supported by the study. Over half of the total matches were made within 10 days of PAI administration and almost all of the matches were within 90 days of administration. Overall, results suggest that the PAI as a diagnostic tool alone matches clinician diagnosis about one third of the time and that the congruence increases the closer the PAI administration is to the psychodiagnostic interview.

Strengths of This Study

A strength of this study is that there is a mixed-gender population, a limitation in much of the existing literature, with the exception of Boone (1998) and Peebles and Moore (1998). Much of the current literature generalizes to males (Calhoun et al., 2000; Douglas, et al., 2001; Eden et al., 2000; Liljequist et al.; 1998; Mosley et al., 2005; Parker et al., 1999; Poythress et al., 2001; Schinka et al., 1994; Wang et al. (1997); Wang and Diamond,1999; Walters et al., 2003), or females (McDevitt-Murphy et al., 2005; Salekin et al., 1997; Salekin et al., 1998; Tasca, et al., 2002), and research on mixed-population treatment milieus is clearly warranted.

Limitations of this Study

There were many limitations to this study. The data exclusions due to invalid PAI protocols that provided no suggested diagnostic hypotheses, invalid PAI validity scales that may have provided invalid diagnostic hypotheses, and length of time between assessment and PAI administration limited the sample size. Another consideration is that not every patient at OSH completes a PAI, and this sample cannot be considered a random or a representative sample. In addition, the use of only archival data limited both the type and amount of data available.

The accuracy of the diagnoses and competency with the PAI of the OSH clinicians is also a question. There was no possible way to insure inter-rater reliability with test administration and there is no guarantee that standardized testing protocols, including cultural norms, were observed for the PAI.

Yet another limitation of the study is that it was retrospective and focused on clinician diagnosis, which may have been only tentative and might or might not have been more closely matched with the PAI summary over time. Also, self-report instruments can be influenced by the patient's emotional state at the time of assessment, as pointed out by Edens et al. (2000). A repeated PAI administration with the same patients when not under stressors such as a psychiatric admission or discharge, or court-mandated evaluations, may have resulted in very different PAI-suggested diagnoses.

Fals-Stewart's (1996) study suggested that PAI ALC and DRG scales may not discriminate between past and present psychoactive substance use and that the PAI cutoff scores for ALC and DRG (T>59) may not be of enough specificity to not categorize any substance use as abuse. This lack of discrimination and specificity about drug use may

have had an effect on the substance use disorders diagnoses that matched most frequently in this study (43 out of 109 PAI matches, or approximately 39%).

A second possible impact on the diagnosis matches was the potential limitation of possible malingering on the PAI by OSH patients, which may have influenced PAI-suggested diagnoses. Roger's et al. (1993) study pointed out that the PAI can be feigned and that feigned depression and generalized anxiety disorders have lower detection rates than feigned schizophrenia. Rogers et al. (1996) added that simply cutting scores to detect feigning based on unusual or atypical symptoms was less likely to be effective with mood and anxiety disorders, which were the third largest set of matches with this study (22 PAI matches, or 20%). Peebles and Moore's (1998) study of socially desirable responding, which suggested a PIM cutoff of 18 rather than Morey's (1991) cutoff of 23, might also have generated different PAI interpretations with this study.

Implications of this Study

These results have implications for the potential use of the PAI as a screening instrument prior to a more thorough clinical assessment. As Douglas et al. (2001) pointed out, as a self-report instrument, the PAI is not labor intensive and may afford valuable information to direct and focus further assessment and treatment. Walters et al. (2003) suggested that self-report measures may be just as effective as non-self-report instruments in predicting forensic outcomes. Having a clinical measurement that assists with patient conceptualization and minimizes unnecessary treatment time and resources is useful for psychodiagnostic assessment.

One of the implications of this study is that the PAI should not be used in isolation to establish diagnoses in a forensic or institutional setting. The PAI is often used

in conjunction with a forensic interview, and this study was conducted with the assumption that every PAI administration related to this study was part of a thorough and comprehensive psychiatric or psychological assessment.

A second implication is that, because effective treatment hinges on accurate diagnoses, the entire treatment program in a forensic or institutional setting may be affected by the appropriate use of instruments such as the PAI. The PAI, as demonstrated by Douglas et al. (2001), Wang et al. (1997), and Wang and Diamond (1999), may enhance major conceptual dimensions which may lead to accuracy of Axis I and II diagnoses, or it may stimulate hypotheses leading to the inclusion or exclusion of Axis II diagnoses, therefore guiding more effective treatment.

Future Research

This study contributes to the literature on the PAI as the first study, to my knowledge, to directly compare the PAI-interpreted summaries with clinician-established diagnoses. As such, replication is clearly needed. This research should be replicated with larger forensic and non-forensic populations and different clinical settings.

Some of the limitations of this study should be addressed in future studies, especially assurances that standardized test protocols, including reading comprehension and cultural considerations, are followed. A single discipline administering the PAI, (e.g., Psychology), with clinicians all uniformly trained and competent in PAI administration and administering all test protocols, would address several of the restrictions of this study. In addition, a larger database of current patients in a mixed-gender milieu, with all patients administered a PAI in conjunction with a structured clinical interview, and with reduced data exclusions, would be a more informative research study. In addition, the

time difference between PAI administration and clinician diagnosis should be as standardized and as short as possible.

An interesting future research option would be to conduct a similar research design as this existing study, using other measurement instruments such as the MMPI-2, and to compare PAI and MMPI-2 diagnostic congruency in this population. Specific diagnosis comparisons, as well as more broad *DSM-IV* classification categories (mood disorders, anxiety disorders, etc.), could be compared to the clinician-established diagnosis for clinical practice information and to further the research base of both the PAI and the MMPI-2.

Conclusions

In this study, diagnoses generated by PAI interpretive software, as suggested by the configuration of PAI scale scores, were not highly congruent with most clinician-established diagnoses. The most congruent diagnoses were assigned closest in time to the administration of the PAI. This study should be replicated with a variety of different clinical settings to increase knowledge of the clinical utility of the PAI.

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APPENDIX A

Brief Description of PAI Scales and Subscales

Scale (scale designation/ number of items)	Description
Validity scales	
Inconsistency (ICN)	Based on ten pairs of items selected from entire inventory, each pair consisting of highly correlated (positively and negatively) items. Used to determine if the respondent is answering consistently through the inventory.
Infrequency (INF/8)	Items are neutral with respect to psychopathology and have extremely high or extremely low endorsement rates. Used to determine if the respondent is responding carelessly or randomly.
Negative Impression (NIM/9)	Items suggest an exaggerated unfavorable impression or malingering, and have relatively low endorsement rates among clinical subjects.
Positive Impression (PIM/9)	Items suggest the presentation of a very favorable impression or involve a reluctance to admit to minor flaws.
Clinical scales	
Somatic Complaints (SOM/24)	Items focus on preoccupation with health matters and somatic complaints specific to somatization and conversion disorders. Subscales are: Conversion (SOM-C, 8 items), Somatization (SOM-S, 8 items), Health Concerns (SOM-H, 8 items).
Anxiety (ANX/24)	Items focus on phenomenology and observable signs of anxiety with an emphasis on assessment across different response modalities. Subscales are: Cognitive (ANX-C, 8 items), Affective (ANX-A, 8 items), Physiological (ANX-P, 8 items).

Appendix A

Brief Description of PAI Scales and Subscales (continued)

Scale (scale designation/ number of items)	Description
Anxiety-Related Disorders (ARD/24)	Items focus on symptoms and behaviors related to specific anxiety disorders. Subscales are: Obsessive-Compulsive (ARD-O, 8 items), Phobias (ARD-P, 8 items), Traumatic Stress (ARD-T, 8 items).
Depression (DEP/24)	Items focus on symptoms and phenomenology of depressive disorders. Subscales are: Cognitive (DEP-C, 8 items), Affective (DEP-A, 8 items), Physiological (DEP-P, 8 items).
Mania (MAN/24)	Items focus on the affective, cognitive, and behavioral symptoms of mania and hypomania.
Paranoia (PAR/24)	Items focus on symptoms of paranoid disorders and more enduring characteristics of paranoid personality. Subscales are: Resentment (PAR-R, 8 items), Hypervigilance (PAR-H, 8 items), Persecution (PAR-P, 8 items).
Schizophrenia (SCZ/24)	Items focus on symptoms relevant to the broad spectrum of schizophrenic disorders. Subscales are: Psychotic Experiences (SCZ-P, 8 items), Social Detachment (SCZ-S, 8 items), Thought Disorder (SCZ-T, 8 items).
Borderline Features (BOR/24)	Items focus on attributes indicative of a borderline level of personality functioning, including unstable and fluctuating interpersonal relations, impulsivity, affective liability and instability, and uncontrolled anger. Subscales are: Affective Instability (BOR-A, 6 items), Identity Problems (BOR-I, 6 items), Negative Relationships (BOR-N, 6 items), Self-Harm (BOR-S, 6 items).
Antisocial Features (ANT/24)	Items focus on a history of illegal acts and authority problems, egocentrism, lack of empathy and loyalty, instability, and excitement-seeking. Subscales are: Antisocial Behaviors (ANT-A, 8 items), Egocentricity (ANT-E, 8 items), Stimulus-Seeking (ANT-S, 8 items).

Appendix A

Brief Description of PAI Scales and Subscales (continued)

Scale (scale designation/ number of items)	Description
Alcohol Problems (ALC/12)	Items focus directly on problematic consequences of alcohol use and features of alcohol dependence.
Drug Problems (DRG/12)	Items focus directly on problematic consequences of drug use (both prescription and illicit) and features of drug dependence.
Treatment scales	
Aggression (AGG/18)	Items tap characteristics and attitudes related to anger, hostility, and aggression, including a history of aggression (physical and verbal) and attitudes conducive to aggressive behavior. Subscales are: Aggressive Attitude (AGG-A, 6 items) Verbal Aggression (AGG-V, 6 items), Physical Aggression (AGG-P, 6 items).
Suicidal Ideation (SUI/12)	Items focus on suicidal ideation, ranging from hopelessness through general and vague thoughts of suicide to thoughts representing distinct plans for the suicidal act.
Stress (STR/8)	Content measures the impact of current or recent stressors in areas of family, health, employment, finances, and other major life areas.
Nonsupport (NON/8)	Content measures a lack of perceived social support, considering both the level and quality of available support.

Appendix A

Brief Description of PAI Scales and Subscales (continued)

Scale (scale designation/ number of items)	Description
Treatment Rejection (RXR/8)	Items focus on attributes and attitudes theoretically predictive of interest and motivation to make personal changes of a psychological or emotional nature: a feeling of distress and dissatisfaction, willingness to participate, recognition of responsibility for actions.
Interpersonal scales	
Dominance (DOM/12)	An interpersonal scale assessing the extent to which a person is controlling and independent in personal relationships. Conceptualized as a bipolar dimension, with a dominant interpersonal style at the high end and a submissive interpersonal style at the low end.
Warmth (WRM/12)	An interpersonal scale assessing the extent to which a person is supportive and empathic in personal relationships. Conceptualized as a bipolar dimension, with a warm, outgoing interpersonal style at the high end and a cold, rejecting interpersonal style at the low end.

Note: From Morey, L. C. (1991). *Personality Assessment Inventory: Professional Manual.* Odessa, FL: Psychological Assessment Resources.

APPENDIX B

Diagnosis Comparisons Worksheet

CASE #	PAI	OSH CLINICIAN
01	I 309.9 Adjustment D/O, Unspec	I 310.1 Pers. Ch Head Trauma, Comb. Type 305.00 ETOH Abuse
	II 799.9 Axis II Deferred	II 799.9 Axis II Deferred
02	I 799.9 Dx Deferred on Axis I	I 296.x Bipolar D/O w/ Psychotic Feat. 305.70 Amphet. Abuse 305.20 Cannabis Abuse
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II v71.09 No Dx on Axis II
03	I 304.90 Other Subst. Dep. 305.00 ETOH Abuse	I 310.1 Pers. Ch FAS, Comb. Type 314.01 ADHD, Comb. Type 305.20 Cannabis Abuse 302.81 Fetishism
	II II 799.9 Axis II Deferred r/o 301.7 Antisocial PD	II 317.0 317.0 Mental Retardation, Mild
04	I 309.9 Adjustment D/O, Unspec r/o 296.20 MDD, Single, Unspec r/o 296.89 Biploar II D/O	I 305.00 ETOH Abuse
	II II 799.9 Axis II Deferred R/o 301.83 Borderline Pers. D/O	II 301.83 Borderline Pers. D/O v62.89 Borderline Intellectual Funct.
05	I 799.9 Dx Deferred on Axis I	I 298.8 Brief Psychotic Episode, Single 305.00 ETOH Abuse by hx 305.20 Cannabis Abuse by hx
	II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	II v71.09 No Dx on Axis II
06	I 305.90 Other Subst. Abuse 296.20 MDD, Single, Unspec r/o 300.4 Dysthymic D/O	I 304.20 Cocaine Dependence 304.40 Meth Dependence 305.50 Opioid Abuse 305.30 Hallucinogen Abuse 305.00 ETOH Abuse 296.30 MDD, Recurrent v65.2 Malingering 292.84 Subst-Induced Mood D/O by hx
	II 799.9 Dx Deferred on Axis II	II 301.9 Pers. D/O NOS

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
07	I 799.9 Dx Deferred on Axis I r/o 296.40 Bipolar D/O, Manic	I 296.6 Bipolar D/O, Mixed r/o 296.20 MDD r/o 295.70 Schizoaffective D/O
	II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	II v62.89 Borderline Int. Functioning
08	I 296.20 MDD, Single, Unspec 295.30 Schizophrenia, Paranoid 304.90 Other Subst. Dep 309.81 PTSD 300.81 Somatization D/O r/o 301.13 Cyclothymic D/O r/o 295.70 Schizoaffective D/O r/o 300.02 GAD r/o 296.89 Bipolar II D/O r/o v65.2 Malingering	I 300.4 Dysthymic D/O 292.19 Amphet-Induced Psychotic D/O 305.00 ETOH Abuse 305.20 Cannabis Abuse r/o v65.2 Malingering
	II 301.83 Borderline Pers. D/O 301.7 Antisocial Pers. D/O 301.22 Schizotypal Pers. D/O	II 301.7 Antisocial Pers. D/O 301.83 Borderline Personality D/O
09	I 309.81 PTSD 300.01 Panic D/O Without Agora r/o 296.89 Bipolar II D/O r/o 296.20 MDD, Single, Unspec r/o 300.02 GAD r/o 300.03 OCD r/o 296.40 Bipolar I D/O, Manic	I 305.00 ETOH Abuse 305.20 Cannabis Abuse 305.90 Other Subst. Abuse
	II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	II 301.9 Pers. D/O NOS
10	I v62.81 Relational Problem NOS r/o 296.40 Bipolar I D/O, Manic r/o 305.90 other Subst. Abuse	I 298.9 Psychotic D/O NOS 305.00 ETOH Abuse 305.60 Cocaine Abuse
	II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	799.9 Dx Deferred on Axis II

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
11	I 799.9 Dx Deferred on Axis I r/o 305.00 ETOH Abuse II 799.9 Dx Deferred on Axis II	I 301.1 Pers. Ch Medical Conditions 305.00 ETOH Abuse II 301.7 Antisocial Pers. D/O 301.83 Borderline Pers. D/O v62.89 Borderline Int. Funct
12	I 303.90 ETOH Dep. 305.90 Other Subst. Abuse. II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	I 295.70 Schizoaffective D/o, Bipolar Type 304.80 Polysubst. Dep. II 799.9 Dx Deferred on Axis II
13	I 305.00 ETOH Abuse 300.4 Dysthymic D/O r/o 296.20 MDD, Single, Unspec II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	I 295.30 Schizophrenia, Paranoid 296.30 MDD, Recurrent 305.60 Cocaine Abuse II 799.9 Dx Deferred on Axis II
14	I 305.90 Other Subst. Abuse II 799.9 Dx Deferred on Axis I R/o 301.9 Pers. D/O NOS	I 295.70 Schizoaffective D/O 305.70 Amphet Abuse II v71.09 No Dx on Axis II
15	I 799.9 Dx Deferred on Axis I II 799.9 Dx Deferred on Axis II	I v71.01 Adult Antisocial Behavior II 799.9 Dx Deferred on Axis II
16	I 300.11 Conversion D/O 295.70 Schizoaffective D/O 295.30 Schizophrenia, Paranoid r/o 296.40 Bipolar I D/O, Manic r/o 296.20 MDD, Single, Unspec r/o 294.9 Cognitive D/O NOS r/o 309.81 PTSD II 799.9 Dx Deferred on Axis I R/o 301.7 Antisocial Pers. D/O	I 295.70 Schizoaffective D/O 305.00 ETOH Abuse II v71.09 No Dx on Axis II
17	I 799.9 Dx Deferred on Axis I r/o 305.00 ETOH Abuse r/o 305.90 Other Subst. Abuse II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	I 305.00 ETOH Abuse 305.70 Amphetamine Abuse II 301.9 Pers D/O NOS

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
18	I 295.30 Schizophrenia, Paranoid 300.4 Dysthymic D/O r/o 295.70 Schizoaffective D/O r/o MDD, Single, Unspec r/o 305.00 ETOH Abuse II 799.9 Dx Deferred on Axis II r/o 301.20 Schiziod Pers. D/O	I 292.12 Amphet-induced Psychotic D/O 305.7 Amphet Abuse r/o 304.4 Amphet Dep. 303.90 ETOH Dep. 305.20 Cannabis Abuse II 301.22 Schizotypal Pers. D/O
19	I 305.00 ETOH Abuse 295.30 Schizophrenia, Paranoid 309.81 PTSD r/o 305.90 Other Subst. Abuse r/o 300.81 Somatization D/O II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	I 296.9 Psychotic D/O NOS 305.00 ETOH Abuse by Hx II v71.09 No Dx on Axis II
20	I 300.4 Dysthymic D/O r/o 301.13 Cyclothymic D/O r/o 296.20 MDD, Single, Unspec r/o 296.40 Bipolar D/O, Manic II 799.9 Dx Deferred on Axis II r/o 301.83 Borderline Pers. D/O r/o 301.7 Antisocial Pers. D/O	I 301.13 Cyclothymic D/O II 301.83 Borderline Pers. D/O 301.7 Antisocial Pers. D/O
21	I 309.9 Adjustment D/O, Unspec r/o 300.4 Dysthymic D/O r/o 300.02 GAD r/o 300.29 Specific Phobia II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	I 314.00ADHD, Inattentive Type 309.28 Adjustment D/O, Mixed r/o 297.1 Delusional D/O r/o 296.7 Bipolar D/O, Unspec II 799.9 Dx Deferred on Axis II
22	I 305.00 ETOH Abuse 304.4 Dysthymic D/O r/o 296.89 Bipolar II D/O r/o 305.90 Other Subst. Abuse r/o 296.20 MDD, Single, Unspec r/o 300.11 Conversion D/O r/o 300.81 Somatization D/O r/o 300.82 Undf. Somatoform D/O II 799.9 Dx Deferred on Axis II	I 295.30 Schizophrenia, Paranoid 303.90 ETOH Dep. 304.40 Meth Dep. 305.50 Opiate Abuse 305.20 Cannabis Abuse II 301.9 Pers. D/O NOS

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
23	I 799.9 Dx Deferred on Axis I r/o 300.15 Disssasoc. D/O NOS	I 296.66 Bipolar D/O, Full Remission
	II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	II 301.83 Bprderline Pers. D/o Traits
24	I 303.90 ETOH Dep. r/o 305.90 Other Subst. Abuse	I 298.9 Psychotic D/O NOS 305.00 ETOH Abuse
	II 799.9 Dx Deferred on Axis II	II v71.09 No Dx on Axis II
25	I 309.9 Adjustment D/o, Unspec r/o 309.24 Adj. D/O w/ Anxiety	I 296.34 MDD, Rec, W/ Psychotic Feat. 305.00 ETOH Abuse hx Polysubstance Abuse
	II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	II 301.6 Dependent Pers. D/O
26	I 309.9 Adjustment D/O, Unspec r/o 300.81 Somatization D/O r/o 300.81 Undiff Somat.D/O	I 311 Depressive D/O NOS 316 Pers. D/o Head Injury
	II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	II r/o 301.9 Pers. D/O NOS
27	I 303.90 ETOH Dep.	I 296.89 Bipolar II D/O 303.90 ETOH Dep. 305.1 Amphet. Abuse
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II 301.83 Borderline Pers. D/o Traits
28	I 300.81 Somatization D/O 300.4 Dysthymic Disorder r/o 296.20 MDD, Single, Unspec	I 295.30 Paranoid Schizophrenia
	II 799.9 Dx Deferred on Axis II 301.20 Schizoid Pers. D/O	II v71.09 No Dx on Axis II
29	I 304.90 Other Subst. Dep.	I 305.20 Cannabis Abuse 305.30 Hallucinogen Abuse 314.9 ADHD NOS
	II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	II v71.09 No Dx on Axis II

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
30	I 295.30 Schizophenia, Paranoid r/o 296.89 BipolarII D/O r/o 295.70 Schizoaffective D/O r/o 296.20 MDD, Single, Unspec r/o 300.2 GAD r/o 294.9 Cognitive D/O NOS II II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	I 298.9 Psychotic D/O NOS r/o 295.70 Schizoaffective D/O r/o v65.2 Malingering v71.09 NO Dx on Axis II
31	I 309.9 Adj. D/O, Unspec r/o 296.89 Bipolar II D/O r/o 301.13 Cyclothymic D/O r/o MDD, Single, Unspec II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	I 296.6x Bipolar I D/O, Mixed 305.00 ETOH Abuse by hx II 301.9 Pers. D/O NOS
32	I 799.9 Dx Deferred on Axis I r/o 296.20 MDD, Single, Unspec r/o 296.89 Bipolar II D/O r/o 300.11 Conversion D/O r/o 300.81 Undiff. Somatoform D/O II 799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	I 310.1 Pers. Ch. Due to Medical Condition 302.2 Pedophilia v61.21 Sexual Abuse of Child II 317.00 Mild Mental Retardation 301.9 Pers. D/O NOS
33	I 305.90 Other Subst. Dep. r/o 296.40 Bipolar I Manic, Unspec r/o 305.00 ETOH Abuse II 799.9 Dx Deferred on Axis II r/o 301.7 Antisocial Pers. D/O	I 295.90 Chronic Undiff. Schizophrenia 304.80 Polysub. Dep. II v62.89 Borderline Int. Funct.
34	I 312.34 Intermit. Explosive D/O II 301.7 Antisocial Pers. D/O R/o 301.83 BPD	I 311 Depressive D/O NOS 302.9 Paraphilia II 301.7 Antisocial Pers. D/O
35	I 305.00 ETOH Abuse II 799.9 Dx Deferred on Axis II	I 298.9 Psychotic D/O NOS 296.xx MDD, Full Remission 305.70 Amphet. Abuse 305.00 ETOH Abuse II 301.83 BPD Traits

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
36	I 305.00 ETOH Abuse r/o 295.30 Schizoph., Para. Type r/o v65.2 Malingering	I 295.30 Schizophrenia, Paranoid Type 305.00 ETOH Abuse 305.20 Cannabis Abuse 305.60 Cocaine Abuse
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II 301.7 Antisocial Pers. D/O
37	I 305.90 Other Subst. Dep. r/o 296.40 Bipolar I, Manic, Unsp	I 292 Subst. Induced Psychotic D/O, w/ Del
	II 301.7 Antisocial Pers. D/O 301.81 Narcissistic Pers. D/O	II r/o 301.9 Pers. D/O NOS
38	I 303.90 ETOH Dep. 304.90 Other Subst. Dep.	I 298.9 Psychotic D/O NOS 304.40 Meth Dep. 303.90 ETOH Dep.
	II 799.9 Dx Deferred on Axis II 301.7 Antisocial Pers. D/O	II 301.7 Antisocial Pers. D/O
39	I 303.90 ETOH Dep. 305.90 Other Subst Dep. 304.4 Dysthymic D/O r/o 309.81 PTSD r/o 295.30 Schizophrenia, Paranoid r/o 296.20 MDD, Single, Unspec	I 309.28 Adj. D/O, Mixed Anx/Dep 305.00 ETOH Abuse 305.20 Cannabis Abuse
	II 301.0 Paranoid Pers. D/O r/o 301.83 BPD r/o 301.7 Antisocial Pers. D/O	II 301.7 Antisocial Pers. D/O r/o 301.83 BPD
40	I 309.9 Adj. D/O, Unspec r/o 305.90 Other Subst. Dep.	I 296.4x Bipolar I, Manic
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II v71.09 No Dx on Axis II
41	I 300.4 Dysthymic D/O r/o 309.81 PTSD r/o 296.20 MDD, Single, Unspec	I 302.2 Pedophilia 296.30 MDD, Recurrent 305.00 ETOH Abuse 299.80 Pervasive Dev. D/O
	II 799.9 Dx Deferred on Axis II r/o 301.7 Antisocial Pers. D/O r/o 301.83 BPD	II 799.9 Dx Deferred on Axis II

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
42	I 303.90 ETOH Dep. 304.90 Other Subst. Dep. II 301.7 Antisocial Pers. D/O	I 304.80 Polysub Dep. II 301.7 Antisocial Pers. D/O
43	I 304.90 Other Subst. Dep. r/o 296.40 Bipolar I D/O, Manic II 799.9 Dx Deferred on Axis II R/o 301.7 Antisocial Pers. D/O	I 300.00 Anxiety D/O NOS 304.80 Polysub Dep. II 301.7 Antisocial Pers. D/O
44	I 303.90 ETOH Dep. 305.90 Other Subst. Dep. II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	I 292.12 Amph-Ind. Psychotic D/O, Halluc. 304.40 Amph. Dep. 305.00 ETOH Dep. II 799.9 Dx Deferred on Axis II
45	I 304.90 Other Subst. Dep. 303.90 ETOH Dep. 300.4 Dysthymic D/O r/o 296.20 MDD, Single, Unspec II 799.9 Dx Deferred on Axis II R/o 301.7 Antisocial Pers. D/O	I 295.90 Schizophrenia, Undiff. 305.90 Other Subst. Abuse II 301.9 Pers. D/O NOS
46	I 309.9 Adj. D/o, Unspec r/o 309.24 Adj. D/o w/ Anxiety r/o 300.4 Dysthymic D/O r/o 300.02 GAD r/o 300.29 Specific Phobia 300.81 Somatoform D/O NOS II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	I 297.1 Delusional D/O, Persec, Resolved II 799.9 Dx Deferred on Axis II
47	I 300.4 Dysthymic D/O r/o 296.20 MDD, Single, Unspec r/o 295.90 Schizophrenia, Undiff. II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	I 295.70 Schizoaffective D/O, Bipolar Type 294.9 Cognitive D/O NOS 305.00 ETOH Abuse r/o 303.90 ETOH Dep. II 799.9 Dx Deferred on Axis II

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
48	I 303.90 ETOH Dep. 305.90 Other Subst. Dep. 296.20 Single, Unspec. 312.34 Intermittent Expl. D/O r/o 300.4 Dysthymic D/O r/o 296.89 Bipolar II D/O II 799.9 Dx Deferred on Axis II R/o 301.83 BPD	I 296.3x MDD, Recurrent 305.00 ETOH Abuse 305.20 Cannabis Abuse Stimulant Abuse 305.90 Inhalant Abuse 307.51 Bulimia Nervosa II 301.83 BPD
49	I 312.34 Intermittent Expl. D/O 300.4 Dysthymic D/O r/o 295.90 Schizoaffective D/O r/o 300.81 Somatization D/O r/o 296.32 MDD, Single, Unspec r/o 309.81 PTSD II 799.9 Dx Deferred on Axis II r/o 301.7 Antisocial Pers. D/O r/o 301.83 BPD	I 300.4 Dysthymic D/O 305.00 ETOH Abuse by hx 305.20 Cannabis Abuse 313.82 Identity Problem II 301.9 Pers. D/O NOS
50	I 303.90 ETOH Dep. 304.90 Other Subst. Dep. II 301.7 Antisocial Pers. D/O	I 303.90 ETOH Dep. 305.20 Cannabis Abuse 305.70 Amphet. Abuse II 301.0 Paranoid Pers. D/O 301.7 Antisocial Pers. D/O
51	I 303.90 ETOH Dep. 296.20 MDD, Single, Unspec 312.34 Intermittent Expl. D/O 305.90 Other Subst. Dep. 300.4 Dysthymic D/O r/o 309.81 PTSD r/o 296.89 Bipolar II D/O II 301.83 BPD	I 296.89 Bipolar II D/O 296.23 MDD, Single, w/o Psyc. Feat. 303.90 ETOH Dep. By hx 305.20 Cannabis Dep. By hx 305.70 Meth Abuse by hx 307.47 Dyssomnia NOS II 301.83 BPD

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
52	I 304.90 Other Subst. Dep. 305.00 ETOH Abuse	I 293.81 Psychotic D/O Due to AIDS w/ del. 294.9 Cognitive D/O NOS r/o 294.11 Dementia Due to AIDS 305.60 Cocaine Abuse by hx r/o 304.20 Cocaine Dependence 305.70 Amphet Abuse by hx r/o 304.40 Amphet Dep. 305.30 Halluc. Abuse by hx 305.50 Opoid Abuse by hx 305.00 ETOH Abuse 305.40 Sedative Abuse
	II 799.9 Dx Deferred on Axis II r/o 301.7 Antisocial Pers. D/O	II r/o 309.1 Pers. D/o NOS
53	I v62.81 Relational Problem NOS r/o 300.4 Dysthymic D/O r/o 300.02 GAD r/o 300.29 Specific Phobia	I 314.00 ADHD, Inattentive r/o 300.4 Dysthymic D/O r/o 300.02 GAD 302.9 Paraphilia NOS v62.89 Phase of Life Problem
	II 799.9 Dx Deferred on Axis II R/o 301.83 BPD	II v71.09 No Dx on Axis II
54	I 296.89 Bipolar II D/O 296.20 MDD, Single, Unspec 295.30 Schizophrenia, Paranoid r/o 295.70 Schizoaffective D/O r/o 300.81 Somatzation D/O r/o 300.81 Undiff. Somatoform D/O r/o 305.00 ETOH Abuse r/o 305.90 Other Subst. Abuse	I 314.xx ADHD by hx 300.4 Dysthymic D/O r/o 295.30 Schizophrenia, Paranoid 305.00 ETOH Abuse by hx
	II 799.9 Dx Deferred on Axis II R/o 301.83 BPD R/o 301.7 Antisocial Pers. D/O R/o 301.0 Paranoid pers. D/O R/o Pers. D/O NOS	II r/o 301.22 Schizotypal Pers. D/O

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
55	I 304.90 Other Subst. Dep. 305.00 ETOH Abuse	I 300.4 Dysthymic D/O 304.40 Meth Dep. By hx 303.90 ETOH dep. By hx 304.60 Inhalant Dep. By hx 305.40 Sedative Abuse by hx 305.20 Cannabis Abuse by hx 304.30 Cannabis Dep. By hx
	II 301.7 Antisocial Pers. D/O R/o 301.83 BPD	II 301.7 Antisocial Pers. D/O
56	I 799.9 Dx Deferred on Axis I r/o 309.24 Adj. D/O w/ Anx r/o 300.02 GAD	I 298.9 Psychotic D/O NOS 305.60 Cocaine Abuse by hx
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II 301.9 Pers. D/O NOS
57	I 296.20 MDD, Single, Unspec 300.4 Dysthymic D/o r/o 300.81 Somatization D/o	I 296.5x Bipolar I D/O, Dep. 305.00 ETOH Abuse, by hx
	II 799.9 Dx Deferred on Axis II R/o 301.83 BPD	II v71.01 Adult Antisocial Bx 799.9 Dx Deferred on Axis II
58	I 799.9 Dx Deferred on Axis I	I 305.70 Amphet. Abuse by hx 305.00 ETOH Abuse by hx r/o 296.90 Mood D/O NOS
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II 301.9 Pers. D/O NOS
59	I 305.00 ETOH Abuse II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	I 296.4x Bipolar I, Manic, W/ Psychotic II 301.9 Pers. D/O NOS
60	I v71.09 No Dx on Axis I II v71.09 No Dx on Axis II	I 295.30 Schizophrenia, Paranoid, Residual II v71.09 NO Dx on Axis II
61	I 303.90 ETOH Dep.	I 303.90 ETOH Dep. 304.80 Polysub. Dep.
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II 301.9 Pers. D/O NOS

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
62	I 303.90 ETOH Dep. 305.90 Other Subst. Dep. 300.81 Somatization D/O 300.4 Dysthymic D/O r/o 296.20 MDD, Single, Unspec r/o 309.81 PTSD r/o 295.90 Schizophrenia, Undiff. R/o 300.23 Social Phobia	I 300.21 Panic D/O W/Agoraphobia 298.9 Psychotic D/O NOS 303.90 ETOH Dep.
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II 301.7 Antisocial Pers. D/O
63	I 309.9 Adj. D/O, Unspec r/o 309.81 PTSD	I 296.80 Bipolar D/O NOS 309.81 PTSD by hx 314.xx ADHD by hx
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II 301.83 BPD
64	I 303.90 ETOH Dep. 304.90 Other Subst. Dep. 296.20 MDD, Single, Unspec 309.81 PTSD 300.81 Somatization D/O r/o 301.13 Cyclothymic D/O r/o 300.02 GAD r/o 300.3 OCD r/o 294.9 Cognitive D/O NOS r/o 296.89 Bipolar II D/O r/o 300.01 Panic D/O w/o Agro.	I 295.70 Schizoaffective D/O 305.00 ETOH Abuse
	II 799.9 Dx Deferred on Axis II R/o 301.83 BPD	II 301.83 BPD Traits
65	I 296.20 MDD, Single, Unspec 309.81 PTSD 300.81 Undiff. Somatization D/O r/o 300.81 Somatization D/O	I 307.xx Somataform Pain D/O 300.81 Somatization D/O r/o 297.1 Delusional D/O, Somatic Type r/o 296.xx MDD
	II 301.4 OCPD r/o 301.82 Avoidant Pers. D/O	v71.09 No Dx on Axis II

APPENDIX B

Diagnosis Comparisons Worksheet (continued)

CASE #	PAI	OSH CLINICIAN
66	I 799.9 Dx Deferred on Axis I	I r/o 311 Dep.D/O NOS 305.00 ETOH Abuse by hx
	II 799.9 Dx Deferred on Axis II R/o 301.7 Antisocial Pers. D/O R/o 301.81 Narcissistic Pers. D/O	II799.9 Dx Deferred on Axis II
67	I 296.20 MDD, Single, Unspec r/o 300.4 Dysthymic D/O	I 295.70 Schizoaffective D/O, Dep Type r/o v65.2 Malingering r/o 300.xx Factitious D/O
	799.9 Dx Deferred on Axis II r/o 301.9 Pers. D/O NOS	II 301.9 Pers. D/O NOS
68	I 309.9 Adj. D/o, Unspec r/o 300.81 Undiff Somatoform D/O	I 298.9 Psychotic D/O NOS 292.11 Amph-ind. Psychotic D/O 303.90 ETOH Dep. 305.70 Amphet Abuse
	II 799.9 Dx Deferred on Axis II 301.9 Pers. D/O NOS	II v71.09 No Dx on Axis II
69	I 303.90 ETOH Dep. R/o 305.90 Other Subst. Dep.	I 295.70 Schizoaffective D/O 305.70 Meth Abuse 305.20 Cannabis Abuse 305.30 Hallucinogen Abuse
	II 799.9 Dx Deferred on Axis II R/o 301.9 Pers. D/O NOS	II v71.09 No Dx on Axis II